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ENVIRONMENTAL ASSESSMENT BOARD

VOLUME:

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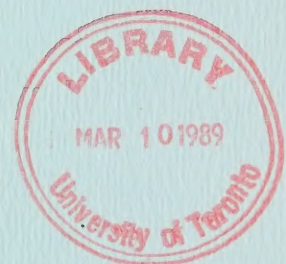
Wednesday, March 1st, 1989

BEFORE:

M.I. JEFFERY, Q.C., Chairman

E. MARTEL, Member

A. KOVEN, Member



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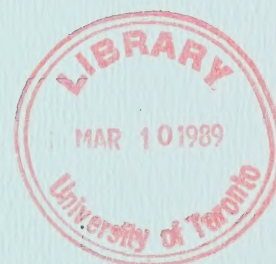
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HEARING ON THE PROPOSAL BY THE MINISTRY OF NATURAL
RESOURCES FOR A CLASS ENVIRONMENTAL ASSESSMENT FOR
TIMBER MANAGEMENT ON CROWN LANDS IN ONTARIO

IN THE MATTER of the Environmental
Assessment Act, R.S.O. 1980, c.140;

- and -

IN THE MATTER of the Class Environmental
Assessment for Timber Management on Crown
Lands in Ontario;

- and -

IN THE MATTER of an Order-in-Council
(O.C. 2449/87) authorizing the
Environmental Assessment Board to
administer a funding program, in
connection with the environmental
assessment hearing with respect to the
Timber Management Class
Environmental Assessment, and to
distribute funds to qualified
participants.

Hearing held at the Ramada Prince Arthur
Hotel, 17 North Cumberland St., Thunder
Bay, Ontario, on Wednesday, March 1st,
1989, commencing at 9:00 a.m.

VOLUME 77

BEFORE:

MR. MICHAEL I. JEFFERY, Q.C.	Chairman
MR. ELIE MARTEL	Member
MRS. ANNE KOVEN	Member

A P P E A R A N C E S

MR. V. FREIDIN, Q.C.)	MINISTRY OF NATURAL
MS. C. BLASTORAH)	RESOURCES
MS. K. MURPHY)	
MS. Y. HERSCHER)	
MR. B. CAMPBELL)	MINISTRY OF ENVIRONMENT
MS. J. SEABORN)	
MR. R. TUER, Q.C.)	ONTARIO FOREST INDUSTRY
MR. R. COSMAN)	ASSOCIATION and ONTARIO
MS. E. CRONK)	LUMBER MANUFACTURERS'
MR. P.R. CASSIDY)	ASSOCIATION
MR. J. WILLIAMS, Q.C.	ONTARIO FEDERATION OF
MR. B.R. ARMSTRONG	ANGLERS & HUNTERS
MR. G.L. FIRMAN	
MR. D. HUNTER	NISHNAWBE-ASKI NATION and WINDIGO TRIBAL COUNCIL
MR. J.F. CASTRILLI)	
MS. M. SWENARCHUK)	FORESTS FOR TOMORROW
MR. R. LINDGREN)	
MR. P. SANFORD)	KIMBERLY-CLARK OF CANADA
MS. L. NICHOLLS)	LIMITED and SPRUCE FALLS
MR. D. WOOD)	POWER & PAPER COMPANY
MR. D. MacDONALD	ONTARIO FEDERATION OF LABOUR
MR. R. COTTON	BOISE CASCADE OF CANADA LTD.
MR. Y. GERVAIS)	ONTARIO TRAPPERS
MR. R. BARNES)	ASSOCIATION
MR. R. EDWARDS)	NORTHERN ONTARIO TOURIST
MR. B. McKERCHER)	OUTFITTERS ASSOCIATION
MR. L. GREENSPOON)	NORTHWATCH
MS. B. LLOYD)	

APPEARANCES: (Cont'd)

MR. J.W. ERICKSON, Q.C.) MR. B. BABCOCK)	RED LAKE-EAR FALLS JOINT MUNICIPAL COMMITTEE
MR. D. SCOTT) MR. J.S. TAYLOR)	NORTHWESTERN ONTARIO ASSOCIATED CHAMBERS OF COMMERCE
MR. J.W. HARBELL) MR. S.M. MAKUCH)	GREAT LAKES FOREST
MR. J. EBBS	ONTARIO PROFESSIONAL FORESTERS ASSOCIATION
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MR. P.D. McCUTCHEON	GEORGE NIXON

(iii)

APPEARANCES: (Cont'd)

MR. C. BRUNETTA

NORTHWESTERN ONTARIO
TOURISM ASSOCIATION

I N D E X O F P R O C E E D I N G S

<u>Witness:</u>	<u>Page No.</u>
<u>KENNETH ARMSON</u> , Resumed	12872
Continued Re-Direct Examination by Mr. Freidin	12872
 <u>DAVID LOWELL EULER</u> , Affirmed <u>PETER PHILLIP HYNARD</u> , <u>JOHN TRUMAN ALLIN</u> , <u>RICHARD BRUCE GREENWOOD</u> <u>CAMERON D. CLARK</u> , <u>GORDON C. OLDFORD</u> , Sworn	 12916
Direct Examination by Mr. Freidin	12931

I N D E X O F E X H I B I T S

<u>Exhibit No.</u>	<u>Description</u>	<u>Page No.</u>
433	Copy of document entitled: Featured Species Management in Ontario by Mr. Baker and Dr. Euler dated February, 1989.	12912
434	Copy of Code of Practice for Timber Management Operations in Riparian Areas dated February 1st, 1989.	12912
435	Letter dated February 21, 1989 from Catherine Blastorah to parties on attached list re: Corrections to Statement of Evidence for Panel No. 10.	12913
436	Hard copy photographs referred to in evidence package of Mr. Hynard.	12914
437	Hand-drawn sketch of results of white pine weevil effect.	12981

1 ---Upon commencing at 9:05 a.m.

2 THE CHAIRMAN: Thank you. Be seated,
3 please.

4 It looks like we will have to get our
5 binoculars out to see everyone, but I can understand
6 that we need a different format for something like
7 eight witnesses or six witnesses, whatever you have got
8 for Panel 10.

9 MR. MARTEL: Score card.

10

11 KENNETH ARMSON, Resumed

12 CONTINUED RE-EXAMINATION BY MR. FREIDIN:

13 MR. FREIDIN: Q. Mr. Armson, I think if
14 you could put Exhibit 422 in front of you, that's an
15 article by Weetman and Webber.

16 A. Yes, I have that.

17 Q. Okay. And your copy of the witness
18 statement. Perhaps we could start there.

19 Now, you were referred to a number of
20 articles on full-tree logging and I want to take you
21 through certain portions of the Weetman and Webber
22 article and also I am going to ask you some questions
23 about the articles in relation to that topic which are
24 in your witness statement.

25 Now, in Exhibit 422, which is the Weetman

1 and Webber article, I understand that two stands were
2 studied?

3 A. That is correct.

4 Q. And are those stands described in the
5 Weetman and Webber article?

6 A. Yes, they are on page 353 of that
7 article.

8 Q. And where on page 353 will we find
9 that description?

10 A. That is in the right-hand column and
11 there is a title to the section, it is called The
12 Stands.

13 Q. And could you read for us the
14 description of the two stands which were the subject of
15 that study?

16 A. Yes. The description begins:
17 "An all-aged stand of balsam fir and red
18 spruce (Abies balsamea...and Picea
19 rubens...) in Mont Tremblant Parc near
20 St. Jovite, Quebec, and a 65-year-old
21 upland black-spruce (Picea mariana...)
22 stand of fire origin on the Pistuakanis
23 River, north of the Baie Comeau, Quebec,
24 were selected as study areas for this
25 project."

1 Q. So that indicates the location and
2 the species of the stands?

3 A. That's correct.

4 Q. And is there a description of the
5 soil characteristics?

6 A. Yes. The remainder of that paragraph
7 describes the soils. It says:

8 "Both stands are growing on deep, well
9 drained till soils with ferro-humic
10 podzol profiles...and raw humus layers 5-
11 10 cm (2-4 in.) deep."

12 Q. Okay. Could you turn to page 366 of
13 this document and I would like you to perhaps just give
14 me some help with the last paragraph on the left-hand
15 column on that page. It reads:

16 "Based on comparisons of crude
17 calculations of the amount of nitrogen,
18 phosphorus, magnesium and calcium removed
19 in tree length (stem from stump..."

20 In tree length:

21 "...logging in two vigorous spruce
22 stands, and the total and chemically
23 extractable amounts of the same nutrients
24 contained in the soils to rooting depth,
25 the following conclusions appear

1 warranted."

2 And I would just like you to clarify for me whether the
3 two vigorous spruce stands that the authors refer to
4 are the same two spruce stands which you described on
5 page 353, that you read to me on page 353?

6 A. Yes.

7 Q. Yes, they are?

8 A. Yes.

9 Q. Could you advise me, did the authors
10 draw any conclusion as to whether there would be any
11 reduction in growth on the two sites that they studied
12 due to nutrient removal in the second rotation of
13 trees?

14 A. Yes, they very specifically draw a
15 conclusion and that is on the same page, 366, in the
16 top right-hand column under 1. It states:

17 "1) It seems unlikely that full-tree
18 logging will result in any reduction in
19 growth due to nutrient removal in the
20 second rotation of trees on these two
21 sites."

22 Q. Okay, thank you. Could you turn to
23 the next page, page 367, and I direct your attention to
24 the right-hand column starting three lines down, and I
25 am going to read to you a portion of that column which

1 was read to you by Ms. Swenarchuk during
2 cross-examination, and I am going to break it into sort
3 of two parts.

4 Starting with the third line, the report
5 says:

6 "With certain exceptions, it appears that
7 most of the till soils of the Canadian
8 Shield and the Appalachian region are
9 mineralogically rich enough and have
10 enough cation-exchange capacity to
11 support the nutrient losses associated
12 with one full-tree logging operation in
13 each 50-year rotation."

14 Can you advise me: Does that portion of the document
15 describe a site which is similar to either of the two
16 stands studied by Weetman and Webber which you referred
17 to, those two vigorous spruce stands?

18 A. Yes, this is a general statement
19 about till soils, but it includes that area of the
20 study.

21 Q. Now, the authors continue and they
22 state:

23 "However, this statement cannot be
24 applied with confidence to forests of the
25 same regions growing on coarse waterlain

1 deposits with low cation-exchange
2 capacity, nor can it be applied to
3 forests growing on organic matter
4 accumulations with very shallow rooting
5 and no inputs of nutrients from lateral
6 water movement."

7 A. Yes, I see that.

8 Q. So those were two sites that they had
9 some question about?

10 A. Yes, correct.

11 Q. Could I refer you to the Foster and
12 Morrison paper found in the Panel 9 witness statement,
13 Exhibit 414 at page 66, and would you keep the Weetman
14 and Webber article open at page 367.

15 Do you have that, both documents in front
16 of you?

17 A. Yes, I do.

18 Q. Could you confirm for me that the
19 Weetman and Webber Report, Exhibit 422, is a report
20 prepared or dated 1972?

21 A. That is correct.

22 Q. And the Foster and Morrison Report,
23 which we find at page 66 of the witness statement, was
24 done -- was a report dated 1976?

25 A. That's correct.

1 Q. Does the Foster and Morrison article
2 describe the study area?

3 A. Yes, it does.

4 Q. Could you direct us to where it does
5 that?

6 A. That is on the right-hand column of
7 page 66 of the witness statement and it is under the
8 heading of The Site.

9 Q. Okay. Now, they indicate where the
10 study area is located and give us some other
11 information about precipitation. And could you
12 indicate, do they describe the soils?

13 A. Yes, they do. In the sentence --
14 beginning in the sentence just slightly more than
15 halfway down, and it reads:

16 "The study area was mapped as Petawawa
17 land type (Pierpoint 1962), being an
18 extensive glaciofluvial flat, comprised
19 of coarse-to-medium sand of very low base
20 status derived from granite and
21 quartzite. The soil belongs to the
22 Wendigo series (Ontario Soil Survey Blind
23 River Map Sheet 41J...) and is classed as
24 a humo-ferric podzol..."

25 Q. Now, that description says that the

1 study area was mapped as being a certain land type,
2 being an extensive glaciofluvial flat. Is that the
3 right pronunciation?

4 A. That's correct.

5 Q. What's glaciofluvial mean?

6 A. Glaciofluvial is a term used in
7 geology to describe materials that have been deposited
8 by the water flowing off -- through and off the ice
9 front normally as the ice front, the glacier recedes.
10 So they are comprised essentially of coarser textured
11 particles.

12 Q. And because of the way they were
13 deposited, are they sometimes referred to as waterlain
14 deposits?

15 A. Yes, they are waterlain and exhibit
16 the characteristics of waterlain deposits.

17 Q. Now, looking at the description of
18 the soil in the Foster and Morrison article that you
19 have just described, and then going back and looking at
20 the two sites that were described in the -- on page
21 367, could you advise: How does the study area of
22 Foster and Morrison in 1976 compare to the two sites
23 described by Weetman and Webber on page 367 of their
24 report?

25 A. Well, the geological materials --

1 apart from location, the geological materials in which
2 the soils have developed are quite different. The one
3 that Weetman and Webber were dealing with, their area
4 was a till, that is a material laid down by the ice
5 during its advance and these are the waterlain
6 materials laid down as the ice is receding.

7 Q. Now, on page 367 I seem to recall
8 there was a reference to two other sites that Weetman
9 and Webber had some -- raised some question about?

10 A. That is correct.

11 Q. Now, could you compare those two
12 sites and advise whether either of those two sites --
13 how they compare to the site studied in Weetman and
14 Webber -- in Foster and Morrison, I am sorry?

15 A. The sites that are described in
16 Weetman and Webber on page 367 where he refers -- or
17 where they refer to coarse waterlain deposits with low
18 cation-exchange capacity, that would cover the type of
19 materials that are described in Foster and Morrison as
20 extensive glaciofluvial coarse-to-medium sands,
21 although here they have qualified it a little more in
22 terms of texture.

23 Q. All right. So, if we could go back
24 to the Foster and Morrison 1976 article, did they draw
25 any conclusions as to whether the sites that they

1 studied, the one described on page 66, could support
2 tree growth for the next rotation after full-tree
3 logging?

4 A. Yes, they in their article came to
5 the conclusion that in fact the soils that they were
6 studying here could support a second stand.

7 Q. And that's on page -- what page?
8 Perhaps you could turn to page 73.

9 A. Yes, as I said -- it is approximately
10 two thirds of the way down the page. Do you wish me to
11 cite that?

12 Q. Yes, please.

13 A. Yes. Approximately two thirds of the
14 way down the page, beginning in the second sentence of
15 the third full paragraph they state:

16 "Our assessment of element cycles and the
17 content of available or potentially
18 available nutrients in soil is that an
19 adequate reserve of exchangeable
20 potassium, calcium and magnesium and
21 organically bound nitrogen and phosphorus
22 will be maintained in the ecosystem to
23 provide nutrients for a satisfactory rate
24 of tree growth in the next 60-year
25 rotation even without the elements in the

1 present tree crop."

2 Q. Thank you. And this was in relation
3 to a site that was similar to one of the two sites that
4 was referred to by Weetman and Webber on page 367 of
5 their report?

6 A. It is the -- it is similar to the one
7 about which Weetman and Webber expressed caution or
8 concern.

9 Q. Thank you. Now, while we are at this
10 particular page, can you advise me: Do Foster and
11 Morrison have anything to say about the Weetman and
12 Webber article, the 1972 article that we have been
13 discussing?

14 A. Yes, they do. If you will just give
15 me a moment to find it now.

16 MR. FREIDIN: Again, if I might, Mr.
17 Chairman, page 73.

18 Q. I think just below the section that
19 you quoted there is a comment.

20 A. Yes, they --

21 Q. Perhaps you could direct the Board to
22 where you are looking and perhaps read the relevant
23 portion.

24 A. Yes. In fact, really the second
25 sentence after the part that I had previously read, and

1 this is about eight lines up from the bottom, the
2 sentence begins:

3 "Weetman and Webber (1972) have
4 demonstrated that till soils of the
5 Canadian Precambrian shield are
6 mineralogically rich enough to support
7 indefinitely stands of Picea
8 rubens...Abies balsamea...and those of
9 Picea mariana with full-tree logging on a
10 50-year rotation."

11 Q. And can you just give us the layman's
12 description of those two stands?

13 A. Those are the stands of the boreal
14 forest spruces, two species that were described by
15 Weetman and Webber and were essentially these till
16 soils.

17 Q. Thank you. Now, I think you can put
18 aside for a moment the witness statement and I want to
19 return to the Weetman and Webber article that Ms.
20 Swenarchuk spent some time on.

21 In addition to referring you to
22 conclusion No. 9, the portion that we just canvassed
23 together, Ms. Swenarchuk also referred you to and read
24 conclusion No. 4.

25 A. Yes, I have that.

1 Q. Which says:
2 "On sites of marginal fertility, such as
3 as dry rocky and sandy sites and muskegs,
4 it should be recognized that full-tree
5 logging may deplete nutrient reserves to
6 such an extent that applications of
7 appropriate fertilizers may be required
8 in order to achieve satisfactory growth
9 rates in the second rotation."

10 Do you recall her--

11 A. Yes.

12 Q. --quoting that and asking some
13 questions about fertilization and its use in Ontario?

14 A. Yes.

15 Q. Now, what I would like to do is read
16 to you, not all of, but two of the conclusions of
17 Weetman and Webber that Ms. Swenarchuk did not read to
18 you.

19 And I am going to try to avoid being
20 technical - it will probably get me into trouble if I
21 do - but before I ask you or refer you to those two
22 paragraphs, I have two questions for you.

23 Are nutrients in living trees in an
24 exchangeable form?

25 A. No, there is only one, potassium,

1 that could be considered readily available or
2 exchangeable in limited quantities.

3 Q. What is the significance of nutrients
4 being in an exchangeable or extractable form?

5 A. Then they are considered available
6 for absorption by plant roots.

7 Q. So if there are nutrients in the soil
8 which are exchangeable or extractable, does that mean
9 that they are there in a form which they can be
10 utilized by plants?

11 A. If they are exchangeable that is a
12 clear assumption. The availability is always hedged as
13 a number of these papers point out, because it is an
14 arbitrary measure and element phosphorus would be the
15 one, primarily that that applies to.

16 Q. All right. I want to refer you to
17 conclusion No. 5, it states:

18 "While the quantity of nutrients removed
19 in full-tree logging..."

20 Those would be the fixed ones:

21 "....appears to be quite large in
22 comparison with the quantity of
23 exchangeable or extractable nutrients in
24 the upward mineral soil..."

25 It refers to the two tables:

1 "...these soil values should be
2 considered as indices of soil fertility
3 rather than absolute values of soil
4 nutrients available to trees. Forest
5 stands seem to be able to extract greater
6 quantities of nutrients than would be
7 indicated by these figures. "

8 And when the statement is made after the reference to
9 the table and it says: "these soil values", to what
10 are the authors referring?

11 A. They are referring to the chemical --
12 the quantities measured by chemical analysis of
13 exchangeable and extractable elements -- nutrient
14 elements in the soil, in the upper mineral soil to be
15 quite specific.

16 Q. And in the last sentence when the
17 statement is made:

18 "Forest stands seem to be able to extract
19 greater quantities of nutrients than
20 would be indicated by these figures..."

21 Could you advise me: What are the figures that the
22 authors are referring to?

23 A. Well, these are the figures that are
24 in the tables, that are Tables 3 and 4 in which those
25 data are given for the amounts of exchangeable and

1 extractable elements.

2 Q. Thank you. I would like to refer you
3 to -- or read to you conclusion No. 7.

4 MR. FREIDIN: And I am not too sure, Mr.
5 Chairman, whether your copy is the same as mine. I had
6 lines through it. I will read it slowly.

7 Q. Conclusion 7 states:

8 "There are certain parallels between
9 nutrient losses due to land clearance,
10 those due to severe forest fires and
11 those involved in full-tree logging. The
12 apparent ability of forested lands to
13 recover from these severe disturbances
14 would seem to justify an optimistic
15 attitude toward full-tree logging
16 nutrient losses."

17 I have read it correctly, Mr. Armson?

18 A. Yes, you have.

19 Q. Would you characterize the isolated
20 comments or conclusions that I have just cited to you,
21 No. 5 and No. 7 as more optimistic with regard to
22 nutrient loss from full-tree logging than the two
23 isolated conclusions cited to you by Ms. Swenarchuk?

24 A. Yes.

25 Q. In reference to timber management, if

1 one were concerned about operational practices, would
2 you consider all of the conclusions reached by the
3 author of a scientific paper such as this in deciding
4 whether that paper necessitated a change in
5 operating --

6 THE CHAIRMAN: Mr. Freidin, how can this
7 witness really tell what the author felt.

8 MR. FREIDIN: I am not asking him what
9 the author felt. I am asking the witness that if he
10 were concerned about timber management in a
11 particular -- operational practices and, in particular,
12 whether operational practices in relation to full-tree
13 harvesting should be changed or modified in some way, I
14 am asking Mr. Armson as a scientist and as a soils
15 expert would he consider -- does he believe it is
16 important to consider all...

17 When you are looking at a scientific
18 paper with that question in mind, should you consider
19 all the conclusions reached by the author when deciding
20 what effect that might have on whether you wanted to
21 change or recommend a change in practices, whether you
22 want to look at all those conclusions together, or
23 would it be proper just to take two or three of ten
24 conclusions and make their decision on that. And
25 that's my question.

1 MS. SWENARCHUK: Mr. Chairman, in our
2 submission had Mr. Armson presented all of the
3 conclusions of all of these papers initially, we would
4 have spent several days recapping these papers
5 repeatedly and I frankly don't think this line of
6 questioning adds anything to the Board's capacity to
7 now look at all the conclusions and make its own
8 conclusion about where the papers are directed.

9 THE CHAIRMAN: Well, the Board is going
10 to ultimately make up its own mind on what conclusions
11 should be considered, what weight should be given to
12 them and whether they should be considered in the
13 context of the entire paper and to what extent.

14 MR. FREIDIN: And I think it would be
15 helpful, Mr. Chairman, I think it's a proper question
16 to ask this witness, as a general approach to the
17 interpretation and the application of knowledge and
18 conclusions of a scientist, what is a proper way to
19 deal with that.

20 I am asking that question, not to have
21 Mr. Armson's evidence particularly to be given any more
22 weight, I think the question is -- and perhaps the
23 answer would be an edifying one for the Board to know
24 how these papers, and I assume many other papers which
25 we presented, should be looked at by the Board when you

1 are considering what weight you are going to give to
2 certain portions which are quoted to you.

3 THE CHAIRMAN: I think that's a proper
4 question, Ms. Swenarchuk. It is certainly dealing with
5 almost the methodology that one would use in
6 approaching this paper or any other paper. And this
7 witness is certainly qualified to at least give his
8 opinion in that regard.

9 MS. SWENARCHUK: We certainly have no
10 dispute with the proposition that the proper way to
11 read a scientific paper is to read all of its
12 conclusions in entirety.

13 THE CHAIRMAN: No, but let's see what
14 this witness feels, in terms of his opinion, how a
15 scientific paper should be looked at and how one should
16 derive whatever they should derive from its contents.

17 Mr. Armson?

18 MR. ARMSON: Yes, I can answer that, and
19 I would say that my remarks would apply to any
20 scientific paper that I review, look at.

21 First, yes, I would read all the
22 conclusions, but I would go beyond that in all cases
23 and look at the data from which the conclusions were
24 drawn and also the basis from which the data was
25 obtained and this is particularly relevant in the area

1 of soil science, and then I would obviously bring my
2 own knowledge and experience and how that -- the
3 conclusions and the study and the methodology used
4 would relate to a given situation that I might be
5 looking at or putting this in the context of.

6 MR. FREIDIN: Thank you.

7 Q. Now, a couple of short questions in
8 relation to the Timmer Paper. That one is found I
9 believe at page 251 of the Panel 10 witness statement
10 which is Exhibit 416A.

11 A. I have that paper.

12 Q. Now, in cross-examination yesterday
13 Ms. Seaborn referred you to this paper and she
14 suggested that of all the sites on full-tree logging
15 that were referred to in the various studies or papers
16 that we canvassed over the last week or so, that that
17 was the only report which looked at a marginal site.

18 THE CHAIRMAN: Mr. Freidin, what page is
19 the Timmer Paper?

20 MR. FREIDIN: Oh, I am sorry, 451.

21 THE CHAIRMAN: 451. Okay. Thank you.

22 MR. FREIDIN: Q. Now, just going back.
23 Ms. Seaborn suggested that of all the sites on
24 full-tree logging we have canvassed and the studies we
25 have looked at over the last while, that this paper,

1 the paper by Timmer and Savinsky was the only report
2 that looked at a marginal site and when she put that
3 proposition to you you stated -- you responded: I
4 don't think so. The site was shallow, but wasn't
5 marginal in terms of productivity.

6 Am I correct that two black spruce sites
7 were studied by Timmer?

8 A. That is correct, one labeled deep and
9 one labeled shallow.

10 Q. Can you advise us what site classes
11 those two sites were?

12 A. I believe they were -- I don't have
13 my site tables with me, I believe.

14 Q. The site tables, is that what you
15 want?

16 A. Yes.

17 Q. And can you just describe the
18 document that has just been given to you?

19 A. Yes. This is Exhibit 88 and is a set
20 of tables expressing the height of trees on the
21 vertical axis and the age and years on the horizontal
22 axis and is the standard format for determining site
23 class on the basis of height or age. So that by taking
24 the age of these two stands which, in most cases, was
25 126 years --

1 Q. Where do you find -- where is the
2 information? Where is that referred to?

3 A. That is on Table 1 on page 454.

4 Q. Okay.

5 A. And the heights in metres - and the
6 age was 126 years - the heights in metres are expressed
7 in the next column on Table 1, that for the black
8 spruce on the deep site being 20.4 metres and that for
9 the black spruce on the shallow site being 17.3 metres.

10 So that by going to the horizontal axis
11 to the approximately -- one can use the 125-year mark
12 and going up that curve to the appropriate height, then
13 for example, with the 20.4 that would put it in the
14 site class -- just the top of the Site Class 1 and the
15 bottom of Site Class 1A; these being, in terms of
16 productivity, the highest. In terms of the shallow
17 site 120 -- one moves up to the 125-year curve to 17.3,
18 it puts it in the lower part of the zone for Site Class
19 1.

20 Q. Thank you. I think I may actually be
21 finished with all those articles.

22 Ms. Swenarchuk asked you some questions
23 about the United Code of Federal Regulations which was
24 marked as Exhibit 427 - and I don't think you need to
25 go to it, Mr. Armson - and she also referred you, or

1 asked some questions from an excerpt document marked
2 Exhibit 428. Its title is: Land and Resource
3 Management Plan.

4 A. Yes.

5 Q. And it was from a United States --
6 one of the states in the United States.

7 A. Yes.

8 Q. She referred you to the excerpt from
9 the plan, and the last page of the exhibit which
10 describes standards and guidelines which apply to the
11 even-aged silvicultural system in that area, part of
12 that description:

13 "Temporary openings created by the
14 application of the even-aged
15 silvicultural system..."

16 And I am paraphrasing here:

17 "...will be 40 acres or less, except..."

18 And then they listed a few exceptions. And she asked
19 you to confirm that you did not agree with the United
20 States' approach and you indicated that you did not.

21 A. That's correct.

22 Q. Can you indicate why not?

23 A. Because, as I had indicated to the
24 Board, the absolute -- you are using the area, the
25 absolute area - whether it be 40 acres or 40 hectares -

1 does not in any way provide the opportunity to take
2 into account the topographic position, the shape or
3 condition of the stand, nor in fact, and more
4 appropriately, the configuration of the cut or the area
5 that is to be cut in relation to what are far more
6 important and those are, in my view, the dimensions
7 that relate to the opening and the adjacent surrounding
8 forest.

9 Q. In dealing with -- or when dealing
10 with clearcuts, Ms. Swenarchuk referred you to the
11 President's Advisory Panel on Timber and the
12 Environment.

13 A. Yes.

14 Q. And that is a document, portions of
15 which appear in Panel No. 10?

16 A. Correct.

17 Q. And I understand that Panel No. 11 as
18 well has a portion referred to?

19 A. Yes.

20 Q. Now, the portion that she quoted
21 from, the pages were excerpts from pages 324 to 326 of
22 Exhibit 416A, Panel 10 witness statement, first volume.
23 Can you just turn to those pages, 324 to 326.

24 A. Yes, I have those pages.

25 Q. Okay. Now, would you just sort of

1 back up to page 319 and could you confirm for me that
2 the portions that she quoted from Chapter 2 -- or that
3 the portions that she quoted were from Chapter 2 and
4 Chapter 2 is entitled Impacts of Timber Harvesting and
5 Production on Environment.

6 A. That is correct.

7 Q. If I can refer you to the footnote,
8 the first footnote which makes certain comments about
9 three papers and their authors, and it says on the
10 bottom of the left-hand corner:

11 "Detailed information on material covered
12 in this chapter is found in Appendix L
13 Maintaining Timber Supply in a Sound
14 Environment by David M. Smith; Appendix M
15 The Impacts of Timber Harvest on Soils
16 and Water by Earle L. Stone; and Appendix
17 N, as in Norman, Timber and Wildlife by
18 William L. Webb."

19 Are you aware, Mr. Armson, of the professional
20 qualifications and/or the stature of those individuals
21 within the scientific community?

22 A. Yes.

23 Q. Which ones are you able to comment
24 upon?

25 A. Two of the three, Professor David M.

1 Smith is the Morris K. Jessop Professor of Silviculture
2 in the School of Forestry at Yale University and Dr.
3 Earle Stone was, at the time of writing this, the
4 Charles Lathropac Professor of Forest Soils at Cornell
5 University and State University of New York. He has
6 since retired. Both gentlemen I know personally.

7 Q. And could you comment on their
8 stature within the scientific community in particular
9 with relation to the areas that they were experts in?

10 A. Yes. They would be two of the most
11 eminent forest scientists in North America and probably
12 in the English-speaking world. Dr. Stone is a fellow
13 of the Soils Science Society of America and he has
14 received other commendations and honors.

15 Professor Smith is probably regarded
16 as -- he is the author of a textbook on forest -- on
17 silviculture and is probably regarded as one of the
18 foremost both teachers and scientists -- forest
19 scientists in the area of silviculture.

20 Q. Thank you.

21 MR. FREIDIN: One moment, Mr. Chairman.

22 Q. And during cross-examination by Ms.
23 Seaborn in relation to the white pine stand on
24 Partridge Lake, it was the subject of some discussion,
25 you were asked the following series of questions and

1 you gave the following answers.

2 I am going to read to you a section from
3 the transcript. Again, it was a portion that I
4 received so I don't have any page numbers. It says:

5 "Q. And would you agree with me that the
6 best way to evaluate environmental
7 impacts in the long term would be to have
8 information that is as site specific as
9 possible."

10 And you answered:

11 "A. I think that the greater amount of
12 information the better, except that
13 sometimes we have so much we can't see
14 our way through it.

15 Q. And isn't that really the situation
16 we were in with the white pine example
17 that you gave us. You described how, for
18 whatever reason, it was a sensitive or a
19 fragile site and the forester went in and
20 had a look at it - and you were going to
21 describe what happened later on this
22 morning - but for whatever reason, they
23 changed their mind about how to treat
24 that site?

25 A. Yes, that is the essence of the

1 example."

2 Was your response. Ms. Seaborn asked you:

3 "Q. And the rationale for making that
4 decision is something that the unit
5 forester would have to write down
6 somewhere? "

7 The answer was:

8 "A. In the present situation the answer
9 is yes. In the example I gave, which is
10 over three decades old, I don't recall
11 and I don't believe -- I couldn't
12 certainly find any written prescription
13 as such."

14 Now, if I have to repeat any of that for you I will,
15 but could you advise what you were referring to when
16 you indicated that a unit forester in the present
17 situation would write down his rationale for that
18 decision?

19 A. He would write down his prescription.
20 His rationale might come from documentation but some of
21 it would come from other sources. I don't -- and if I
22 said write down a rationale -- I don't think you write
23 down a rationale for a prescription.

24 You consider you have a rationale for it,
25 but I don't necessarily think you would write it all

1 down. In fact, I don't think you would get around to
2 writing prescriptions if you had to write all the
3 rationales out.

4 You would have a rationale, some of that
5 would be based on documentation that would exist, some
6 of it would be based on, for example, the information
7 that would be provided in silvicultural guides, some of
8 it would come from your own experience. So in that
9 sense the rationale is somewhat more dynamic than
10 perhaps I indicated there.

11 The prescription is the key piece of
12 writing that he would look for in going back and
13 certainly that -- as I indicated there, in white pine
14 that is what you would be looking for. The rationale
15 would be something over and above that.

16 Q. What does a prescription tell you?

17 A. Well, the prescription in the timber
18 management planning process is stand and site-specific.
19 It says that in this particular location this stand
20 with these attributes type of -- you could say working
21 group or forest unit, there is a prescription for site
22 preparation or regeneration, whatever.

23 Well, the either/or would be to carry
24 through the sequence and there may well be in fact
25 alternative prescriptions which the forester considers

1 are important because due too, for example, season,
2 nature of availability of equipment or - in the
3 instance for example using the use of prescribed fire -
4 there would almost normally be an alternative because
5 one can't be sure that one can use that given variable
6 nature of weather.

7 Q. I would like to refer you to Exhibit
8 56, the Forest Resources of Ontario 1986, page 17.

9 A. Yes, I have that page.

10 THE CHAIRMAN: Are we supposed to have
11 that?

12 MR. FREIDIN: I am sorry, I apologize, I
13 didn't have a chance to tell Mr. Mander which documents
14 we were going to have.

15 THE CHAIRMAN: Do we need it?

16 MR. FREIDIN: I think it is short, it is
17 very short.

18 THE CHAIRMAN: Okay.

19 MR. FREIDIN: Q. Ms. Seaborn asked you
20 some questions about, on page 17 and in particular I
21 want to address or direct your attention to a section
22 she quoted in relation to production forest reserve.

23 It is in the last paragraph on page 17 of
24 Exhibit 56 and the portion that she quoted to you
25 starts in the third line, and I will read to you the

1 section that she quoted:

2 "Production forest reserves are those
3 areas representing 6.1 per cent or 2.4
4 million hectares of productive forest
5 land which have significant silvicultural
6 and forest management impediments."

7 She suggested in her questioning to you that this
8 section that I just read could be interpreted to say
9 that there could be impediments to normal operations.
10 And you agreed, you said correct.

11 A. That's correct.

12 Q. Where you do encounter some
13 impediments due to -- those kind of impediments due to
14 limitations regarding equipment, for example, could the
15 options for treatment be reduced?

16 A. Well, they would be altered. You
17 would have ways of doing it, that you would substitute
18 for the ones that you would normally use.

19 Q. And is that a normal practice of
20 substituting a different approach?

21 A. Yes, it might even be a substitution
22 of the season in which you operate.

23 Q. And without asking you to go to it,
24 Mr. Armson, could the silvicultural guide be reference
25 for direction or guidance as to how to deal with the

1 situation where you run into one of these impediments?

2 A. Oh, very definitely. I believe that
3 is part of the on-going application of silviculture to
4 deal very much with those situations.

5 Q. Will you take your copy of Exhibit
6 414, which is the witness statement for Panel 9 and
7 turn to page 52.

8 A. Yes, I have that.

9 Q. Now, Ms. Seaborn asked you -- or
10 quoted to you the second, third and fourth line. I
11 would like to just go back to page 51 just to the
12 bottom of the page so we can read or put that quote
13 into context.

14 Starting at the last line:

15 "Under the present types of timber
16 management activities even with full-tree
17 harvesting which results in removal of
18 most of the tree canopies, there is
19 little if any evidence that such removal
20 significantly reduces nutrient levels in
21 the forest system so as to impact on
22 future forest development."

23 And she just read to you the second, third and fourth
24 line on page 52, all right, and I am not being critical
25 of her in doing that.

1 When she read that to you she said: And
2 that is your position on this method referring, to
3 full-tree harvesting, and you said correct.

4 A. Yes.

5 Q. Mr. Armson, is there any particular
6 type of evidence that might cause you to reconsider
7 your position as stated on page 52 in the future?

8 A. If future studies were to show that
9 full-tree harvesting on very specifically defined
10 situations reduced the growth of the productivity of
11 subsequent -- a subsequent rotation of trees, then I
12 would reconsider. There is no such evidence to date.

13 Q. And can you give the Board any
14 guidance on how, in your view, one might go about
15 trying to obtain that kind of evidence?

16 A. They would have to be a long-term
17 study, they would have to involve, in my opinion,
18 studies which I have referred the Board to by soils
19 scientists who recognize that it is not the arbitrary
20 amount of nutrients either in the forest or in the
21 various pools that are critical, but rather the
22 movement - and we have used the word flux of elements -
23 from particularly the soil layers to the vegetation;
24 the dynamics of return of nutrients - and Foster and
25 Morrison refer to this on a number of occasions - not

1 only from the forest cover but more particularly from
2 the lesser vegetation has, in many of these studies,
3 not being totally ignored but not been dealt with
4 adequately, and that is not only my opinion but the
5 opinion of many soils scientists.

6 And it is I think an area which -- if I
7 can put it this way, if it is a factor that we are not
8 really measuring and yet we know it is there, then this
9 gives me some sense of optimism, if we look at the
10 growth of the trees and we find the diminution in
11 growth and we know that we are not measuring well the
12 dynamics of it, and also not measuring well one of the
13 components which, although it may not be the most
14 obvious and largest, can be quite significant as we
15 know from certain European conditions, that is the
16 rather more rapid cycling of nutrients within the
17 lesser vegetation as compared to the upper.

18 We know that that can be very critical in
19 certain situations in Europe for certain elements and
20 yet we have not really looked at it here. So I am
21 optimistic because that is always going to be a plus
22 factor rather than a negative factor because we don't
23 remove the lesser vegetation, we don't normally -- we
24 don't take away the woody shrubby vegetation.

25 MR. FREIDIN: Those are my questions, Mr.

1 Chairman.

2 THE CHAIRMAN: Thank you.

3 MR. FREIDIN: Thank you, Mr. Armson.

4 THE CHAIRMAN: Thank you, Mr. Armson. I
5 trust we will be seeing you again later on, one way or
6 the other.

7 --- (Mr. Armson withdraws)

8 THE CHAIRMAN: Do you need some time to
9 set up for the next panel, or how are you going to
10 approach the next panel?

11 MR. FREIDIN: Mr. Chairman, I would
12 appreciate breaking until one o'clock. So we can take
13 our usual one and a half hour -- we can take our lunch
14 before one o'clock and we can start at one.

15 THE CHAIRMAN: Okay. And then you are
16 going to be prepared to go for the rest of the
17 afternoon with Panel 10?

18 MR. FREIDIN: I think we will make it
19 through.

20 THE CHAIRMAN: Okay. Thank you. One
21 o'clock.

22 ---Recess taken at 10:00 a.m.

23 ---Upon resuming at 1:00 p.m.

24 THE CHAIRMAN: Thank you.

25 Be seated, ladies and gentlemen.

1 MS. SWENARCHUK: Mr. Chairman, before my
2 friend commences, we have just been served with a
3 fairly extensive document on Featured Species
4 Management in Ontario Forests relevant presumably to
5 Panel 10 served at this moment.

6 Now, obviously my client has considerable
7 interest in wildlife questions and would have been
8 undoubtedly prepared to file relevant interrogatories
9 on such an important matter.

10 I really want to protest the way that
11 this has been done, the very late filing of this
12 document, and I would like to ask Mr. Freidin exactly
13 his intention with regard to it.

14 MR. FREIDIN: That document, firstly, was
15 not served prior to today because it was not completed
16 until yesterday. The document is intended to support
17 evidence to be given by Dr. Euler and I don't think it
18 is really necessary to go into exact detail of that.
19 Those are the circumstances, Mr. Chairman.

20 THE CHAIRMAN: Is it going to be dealt
21 with in terms of evidence given by Dr. Euler today.

22 MR. FREIDIN: No, Dr. Euler won't be
23 called until next week.

24 THE CHAIRMAN: Well, as always, Mr.
25 Freidin, we should endeavor - and I am not suggesting

1 that the document wasn't finished until yesterday - but
2 we should endeavor, in terms of providing the other
3 parties with the documents, to give them sufficient
4 time so that they can both review them, have their
5 experts review them and be in a position to deal with
6 them appropriately.

7 MR. FREIDIN: I agree, Mr. Chairman, and
8 we have been making every effort to do that. I would
9 perhaps just add in relation to that report, I don't
10 believe that -- the document is there to, I think,
11 primarily support evidence which was already going to
12 be given by Dr. Euler.

13 The issues, which may or may not concern
14 Forests for Tomorrow or any other party, were all
15 raised in the material which was provided along with
16 the witness panel itself, witness panel statement. I
17 believe that there are probably interrogatories asked
18 about those specific issues.

19 This document is a document which I don't
20 believe raises any new issues but rather speaks to
21 those issues which are of concern and is an attempt, as
22 best we can at this particular time, to not only
23 address those issues of concern but to provide some
24 backup to statements which would be made by Dr. Euler.

25 MS. SWENARCHUK: Well, as the Board will

1 see when we come to deal with interrogatories in this
2 matter, we addressed a number of interrogatories to the
3 question of the featured species management theory on
4 Panel 10 and I believe those interrogatories were filed
5 well before Christmas, I don't recall the exact date
6 now.

7 It is an issue that is of concern to us
8 and to whatever extent that issue is addressed by
9 additional evidence, of course, we want our experts to
10 review it and it's not really of any reassurance to us,
11 with all respect to my friend to say that this does not
12 deal with the evidence in any way or however Mr.
13 Freidin put it, clearly it is for us a matter of our
14 experts reviewing it to address that matter.

15 There is a break coming and presumably we
16 won't be cross-examining until after the break and
17 perhaps there is sufficient time then to do this, but
18 surely at a minimum Mr. Freidin might have informed us
19 in advance that this was being done, we might have then
20 made contact with experts to make sure they would be
21 available and this is really, in our view, a highly
22 prejudicial way to file the evidence at this late date.

23 THE CHAIRMAN: Well, Ms. Swenarchuk, the
24 Board will endeavor to ensure that any prejudice to
25 your client with respect to this particular document is

1 minimized.

2 MS. SWENARCHUK: Thank you.

3 THE CHAIRMAN: Now, certainly if you
4 haven't had an opportunity to have your experts examine
5 the document prior to your cross-examination, then we
6 will consider what steps at that time we can take to
7 make sure that you will be in a position to ask
8 questions relative to that document at an appropriate
9 time even if it means perhaps dealing with it, Mr.
10 Freidin, at a later time subsequent to this panel
11 retiring.

12 MR. FREIDIN: I have no objection to that
13 whatsoever. It was not the intention to prejudice
14 anybody by filing it at this late date and I say that
15 is not the intention and if in fact somebody is going
16 to be prejudiced by that and that is clear, then I am
17 quite content to have it dealt with in a fair manner.

18 MS. SWENARCHUK: Might I just ask that in
19 the future if additional documents are in preparation
20 Mr. Freidin give us some notice of that so that we can
21 make the necessary arrangements.

22 THE CHAIRMAN: Well, if we do have a
23 similar incident like this, Mr. Freidin, perhaps it
24 would be advantageous to the other parties to at least
25 know that further documentation is coming and what area

1 it addresses so that they can line up their experts to
2 be available to review them.

3 It is difficult because many of the
4 experts that do this kind of review are not here and
5 they have to be engaged and dealt with elsewhere in the
6 province.

7 MR. FREIDIN: (nodding affirmatively)

8 MR. McKIBBON: Mr. Chairman, we find
9 ourselves in a similar position to Ms. Swenarchuk and
10 we wondered whether or not we might be able to have the
11 same opportunities to review this material with our
12 experts and go through interrogatories, if need be, and
13 the normal process that would have applied otherwise.

14 THE CHAIRMAN: Yes. Certainly we will
15 not differentiate between your client or any of the
16 other intervenors as amongst themselves. You will all
17 be treated in essentially the same manner and we will
18 ensure that fairness is the paramount concern.

19 Very well. Are there any other matters
20 of a procedural nature at this point?

21 Ms. Blastorah?

22 MS. BLASTORAH: Mr. Chairman, I just have
23 a few documents to file at this time, one of them being
24 the Featured Species Report we have been just been
25 speaking of.

1 THE CHAIRMAN: Very well.

2 MS. BLASTORAH: I have copies of that for
3 the Board as well as one for the official exhibit.
4 (handed)

5 THE CHAIRMAN: This will be Exhibit 433.
6 This document is Featured Species Management in Ontario
7 by Mr. Baker and Dr. Euler dated February, 1989.

8 ---EXHIBIT NO. 433: Copy of document entitled:
9 Featured Species Management in
10 Ontario by Mr. Baker and Dr.
Euler dated February, 1989.

11 MS. BLASTORAH: Next, Mr. Chairman, we
12 have copies of the Code of Practice for Timber
13 Management Operations in Riparian Areas dated February,
14 1st, 1989 and this document was already referred to on
15 the record I believe during the evidence of Panel 8 and
16 the parties did receive it some time ago.

17 I have copies for the Board. (handed)

18 THE CHAIRMAN: Has it already got an
19 exhibit number?

20 MS. BLASTORAH: No, it was merely a
21 question from Ms. Seaborn, as I recall, as to whether
22 or not it would be received in the near future and, at
23 that time, we indicated it was already in the mail.

24 THE CHAIRMAN: Very well. Exhibit 434.

25 ---EXHIBIT NO. 434: Copy of Code of Practice for

1 Timber Management Operations in
2 Riparian Areas dated February
 1st, 1989.

3 MS. BLASTORAH: I do have a few extra
4 copies of that if anybody didn't get one or doesn't
5 have it with them.

6 Finally - I beg your pardon, not
7 finally - second last I have a letter from Catherine
8 Blastorah to the list attached -- to the parties dated
9 February 21, 1989 re: Corrections to Statement of
10 Evidence for Panel 10 and there was some question
11 raised -- or one question raised by Ms. Seaborn in
12 relation to the contents of the letter.

13 And just for clarification sake, perhaps
14 I should point out that Item No. 2 on the document
15 refers to Document No. 2 in Panel 10 which is entitled:
16 Logging Methods in Ontario, and the correction is to
17 paragraph 20 which is on page 50 of the witness
18 statement and that is to the executive summary dealing
19 with that portion of the evidence which is contained in
20 Document No. 2.

21 THE CHAIRMAN: Okay. Exhibit 435.

22 ---EXHIBIT NO. 435: Letter dated February 21, 1989
23 from Catherine Blastorah to
24 parties on attached list re:
 Corrections to Statement of
 Evidence for Panel No. 10.

25 MS. BLASTORAH: Lastly, Mr. Chairman, I

1 have hard copies of the photographs which are contained
2 in the evidence of Mr. Hynard for this panel. They are
3 exactly the same photographs as are contained in the
4 witness statement except that two have been deleted and
5 I am just attempting to obtain the numbers of those
6 photographs.

7 THE CHAIRMAN: Very well. Is the package
8 going to be given one exhibit number, or do you want
9 them individually?

10 MS. BLASTORAH: I think so, yes. It is
11 all contained in the one envelope and they are all
12 contained in the witness statement, so I think that
13 makes sense.

14 THE CHAIRMAN: All right. exhibit 436.
15 ---EXHIBIT NO. 436: Hard copy photographs referred to
16 in evidence package of Mr.
Hynard.

17 MS. BLASTORAH: If necessary, Mr.
18 Chairman, perhaps we could mark them A, B, C and so on
19 as Mr. Hynard refers to them during his evidence. He
20 will be using them as slides, the same pictures.

21 THE CHAIRMAN: All right.

22 MS. BLASTORAH: Actually they are already
23 numbered in the witness statement, so we could refer to
24 them by the numbers which are contained in the witness
25 statement.

1 THE CHAIRMAN: All right, that may be
2 easier.

3 MS. BLASTORAH: I think that is simpler.
4 And just for your information, there are not hard
5 copies of photographs 1.4.2 and 3.5 and Mr. Hynard will
6 not be using those as part of his presentation.

7 THE CHAIRMAN: Thank you.

8 MS. BLASTORAH: (handed) Thank you, Mr.
9 Chairman.

10 THE CHAIRMAN: Thank you, Ms. Blastorah.

11 Now, ladies and gentlemen, just before we
12 swear the panel, I just wanted to mention that Mr.
13 Mander will be taking pictures throughout the afternoon
14 and I trust it will not upset any of the parties.

15 It is the Environmental Assessment
16 Board's annual report time and this may be one of the
17 hearings that will be referred to in a peripheral way
18 in that report and we sometimes endeavor to have
19 photographs of actual hearings. This is one of the
20 ones that will be covered, so if he creeps up behind
21 you and takes a picture you will know what it is about,
22 certainly not for any sinister purpose.

23 Now, as far as swearing the panel, Dr.
24 Euler, I understand that you wish to affirm?

25 DR. EULER: Yes.

1 THE CHAIRMAN: All right, thank you.
2 Would the rest of the witnesses please step forward to
3 be sworn.

4 DAVID LOWELL EULER, Affirmed
5 PETER PHILLIP HYNARD,
6 JOHN TRUMAN ALLIN,
7 RICHARD BRUCE GREENWOOD,
8 CAMERON D. CLARK,
9 GORDON C. OLDFORD, Sworn

10 THE CHAIRMAN: Are you ready Mr. Freidin?

11 MR. FREIDIN: Yes.

12 Mr. Chairman, I always forget whether we
13 ask to have the witnesses qualified before my opening
14 remarks or after.

15 THE CHAIRMAN: It doesn't matter. It is
16 going to be a short qualification in accordance with
17 the Board's procedure, but it doesn't matter to the
18 Board.

19 MR. FREIDIN: All right. Well, perhaps
20 we can deal with the qualifications first.

21 THE CHAIRMAN: Very well.

22 MR. FREIDIN: Peter Hynard I would ask to
23 be qualified as an expert witness for silvicultural
24 harvest systems in the field of applied silviculture in
25 the Great Lakes/St. Lawrence Forest region including
silvicultural harvest systems, natural regeneration
methods and tending treatments.

1 He will also be qualified as an expert in
2 financial analysis in the area of silvicultural
3 practices, in air photo interpretation, in field
4 inventory procedures and in timber management planning
5 including the integration of timber production with
6 other resource management interests and deer habitat
7 management.

8 THE CHAIRMAN: Is that all?

9 MR. FREIDIN: That is all. And I might
10 indicate, Mr. Chairman -- well...

11 THE CHAIRMAN: Does anybody object to any
12 of those qualifications?

13 MS. SWENARCHUK: Perhaps Mr. Freidin
14 could assist us with Mr. Hynard's C.V., the basis of
15 his qualification as a financial analyst.

16 MR. FREIDIN: Well, I don't know whether
17 I can qualify him as a financial analyst. Mr. Hynard,
18 perhaps you can advise the Board the experience and/or
19 the training that you have in financial analysis in the
20 area of silvicultural practices and perhaps you should
21 indicate to the Board what that is as a starting point.

22 MR. HYNARD: Well, to begin with my
23 academic studies in financial analysis were in forestry
24 at the University of Toronto. Since that time I have
25 carried out an assignment in determining applications

1 for financial analysis methodologies in Ontario's
2 silviculture in 1983. A result of that investigation
3 was a paper and it was filed as Reference No. 1 to this
4 exhibit.

5 Since that time I have also instructed
6 financial analysis methodologies to foresters in, I
7 believe, three workshops across Ontario.

8 THE CHAIRMAN: And your formal training
9 at university, was it part of the forestry course.

10 MR. HYNARD: Yes, it was.

11 THE CHAIRMAN: Would this be the same
12 financial type of training that all foresters would
13 receive?

14 MR. HYNARD: Yes.

15 THE CHAIRMAN: Or was it something
16 different?

17 MR. HYNARD: No, exactly the same.

18 THE CHAIRMAN: Exactly the same.

19 MR. FREIDIN: There was some subsequent
20 involvement after your graduation from forestry.

21 MR. HYNARD: That's correct, that's
22 correct.

23 I carried out some investigation of
24 determining how those methodologies, normal forest --
25 financial analysis methodologies would best fit in

1 forestry practice and a result of those studies was
2 that report Reference No. 1 to this exhibit.

3 And since that time I have been teaching
4 the application of those methods to foresters.

5 MR. FREIDIN: Mr. Chairman, I was going
6 to interject at the outset. Some of these
7 qualifications are qualifications which aren't going to
8 arise or are not required to give evidence that they
9 are going to give in this panel.

10 I was attempting to sort of cover the
11 waterfront so that we wouldn't have to qualify the
12 witnesses each time. I believe that --

13 THE CHAIRMAN: Meaning that some of these
14 witnesses are going to reappear in future panels?

15 MR. FREIDIN: Oh, yes. Mr. Hynard is
16 going to be reappearing in Panel 11 and 12. I think
17 Document No. 1 that he refers to is in Panel No. 12 as
18 opposed to Panel No. 10.

19 I believe on the evidence that was just
20 given by Mr. Hynard that he qualified as requested, but
21 if there is any question or doubt about that, I am
22 quite content to perhaps lead further evidence in Panel
23 No. 12. But I would prefer not to have to do that if
24 in fact the answer given by Mr. Hynard is satisfactory
25 to the Board.

1 THE CHAIRMAN: Do you have anything
2 further, Ms. Swenarchuk?

3 MS. SWENARCHUK: Just one thing. Is the
4 future document not in Panel 13 instead of Panel 12?

5 MR. HYNARD: I am sorry, I believe it is
6 Panel 12.

7 MS. SWENARCHUK: 12 or 13?

8 MR. FREIDIN: And I can't help you
9 whether it is 12 or 13, Ms. Swenarchuk. We can check
10 right now for you, though.

11 MS. SWENARCHUK: Well, I am prepared to
12 go with this. I think whether or not I will have some
13 questions about the degree of expertise, I think, will
14 depend exactly what type of evidence is led.

15 So I don't have any further questions at
16 this time. There may be some in the future depending
17 on where he goes with his evidence.

18 THE CHAIRMAN: Are there any other
19 questions about Mr. Hynard's qualifications from
20 anybody else?

21 Very well. The Board is prepared at this
22 time to qualify Mr. Hynard in the areas specified by
23 his counsel.

24 MR. FREIDIN: And Mr. Oldford, he is a
25 professional forester as is indicated in his curriculum

1 vitae, but the matter of his expert evidence here today
2 or in direct evidence will be as a person expert in
3 logging methods.

4 And I intend very, very briefly, Mr.
5 Chairman, in the first few questions of Mr. Oldford's
6 examination to establish that he has experience in
7 relation to logging methods both within government and
8 for companies.

9 THE CHAIRMAN: Any questions about Mr.
10 Oldford's qualifications?

11 Very well, he will be qualified.

12 MR. FREIDIN: All right. Richard
13 Greenwood, I ask that he be qualified. Again he is a
14 professional forester as is set out in his curriculum
15 vitae and he has particular expertise in silviculture
16 and the field practice of forestry in the boreal forest
17 region and he has particular expertise in technology
18 transfer, in particular the review and interpretation
19 of scientific and technical literature for application
20 to Ontario and transfer of knowledge to field staff.

21 And you'll see from the curriculum vitae
22 that there is an extensive description of Mr.
23 Greenwood's experience in that area and involvement in
24 that area as a member of the technology development
25 unit in Timmins.

1 THE CHAIRMAN: Any objections to these
2 qualifications?

3 Very well. He will be so qualified in
4 those areas.

5 MR. FREIDIN: Dr. John Allin, I would ask
6 that he be qualified as an expert in fisheries biology
7 and in the area of water quality as it affects aquatic
8 life.

9 THE CHAIRMAN: Any objections?

10 So qualified.

11 MR. FREIDIN: Dr. David Euler, I ask that
12 he be qualified as an expert witness for wildlife
13 habitat management including - I have five things I
14 want to list, Mr. Chairman:

15 1: Managing vegetation to produce
16 wildlife habitat in the boreal forest and the Great
17 Lakes/St. Lawrence Forest;

18 2: Data management systems in
19 integrating wildlife habitat and timber management;

20 3: --

21 THE CHAIRMAN: Just a moment.

22 MR. FREIDIN: 3: Field inventory of
23 wildlife habitat;

24 4: Evaluation of wildlife habitat; and,

25 5: Impacts of fire on wildlife habitat.

1 THE CHAIRMAN: Anybody wish to challenge
2 any of those qualifications?

3 Very well. He will be qualified in those
4 areas.

5 MR. FREIDIN: I believe Mr. Clark has
6 already been qualified, I believe as an expert in
7 resource management -- integrated resource management
8 and conflict resolution. If he hasn't, I would ask
9 that he be qualified in those areas.

10 THE CHAIRMAN: Very well. He will be
11 qualified in those areas as well.

12 MR. FREIDIN: Mr. Chairman, a few opening
13 remarks.

14 This panel, as you appreciate, will be
15 covering a very wide spectrum of subject matters and it
16 is not my intention to go through the index of their
17 papers, but there are four or five general messages
18 which I think are important not only to this panel but
19 to all of the panels that have preceded this one and
20 which will follow and some messages which are of
21 particular -- perhaps particular relevance or
22 application to the panels which are dealing with the
23 activities and the potential effects of those
24 activities.

25 In that regard the first point that I

1 would like to make is that it will be the Ministry's
2 position that harvesting does not cause significant
3 adverse environmental effects.

4 When you read the papers that have been
5 prepared for this panel, Mr. Chairman, and when the
6 evidence is being given by these witnesses, it will be
7 important to keep in mind that the way the subject
8 matter has been approached in these papers is to
9 identify not actual effects but potential effects.
10 You can read through these papers and it
11 says over and over these are potential effects.

12 It is the Ministry's position that those
13 potential effects are addressed through normal practice
14 of the Ministry and of the forest industry and as a
15 result most, if not -- well, most of those effects in
16 fact do not become actual and if they do, they are not
17 significant effects.

18 I would, in relation to this point, just
19 refer the Board to two submissions that I made at the
20 beginning of Panel No. 9 I believe and, again, concepts
21 or principles which apply throughout all of the
22 evidence in relation to effects and that is:

23 When assessing the significance of an
24 effect, one would have to consider the magnitude, the
25 intensity, the frequency and the duration of that

1 effect; and, secondly - and I won't repeat the
2 definitions - but the panel members will attempt to be
3 consistent in the use of the words prevent, minimize,
4 mitigation and prevention -- pardon me, and remedying
5 of environmental effects.

6 THE CHAIRMAN: By that do you mean they
7 will all be using the same definitions for those words?

8 MR. FREIDIN: We hope so, otherwise it
9 will be a bit confusing.

10 THE CHAIRMAN: Perhaps at the outset you
11 might clarify, when you get into the evidence, what
12 definitions you are in fact using for those words.

13 MR. FREIDIN: All right. I think the
14 quarterback on Panel 7 was Mr. Clark and because of
15 experience he has been asked to be the quarterback
16 again. So, Mr. Clark, think about that because I'm
17 going to ask you.

18 The second main point that should be kept
19 in mind is that we are dealing in this panel with
20 harvest by and large --

21 THE CHAIRMAN: Sorry, go ahead.

22 MR. FREIDIN: In this panel we are
23 dealing with harvest by and large in isolation from the
24 other timber management activities, and as you know
25 these activities, Mr. Chairman, these activities are

1 not planned in isolation but they are all
2 inter-related, but for the purpose of presenting
3 evidence at this hearing or any other hearing,
4 practicality required us to separate the activities and
5 deal with them sort of one at a time.

6 THE CHAIRMAN: But that is not going to
7 prevent the parties from dealing in cross-examination
8 or otherwise with the relationship between this
9 activity and some of the other values and resources?

10 MR. FREIDIN: Not at all, Mr. Chairman.
11 My next comment that I had written down here was wide
12 open cross-examination, a phrase which you have coined
13 and I would assume that one of the reasons that you
14 made that statement was in fact because of an
15 appreciation of the inter-related aspect or nature of
16 these activities.

17 The third main message is one which form
18 part of the Panel No. 8 and again which sort of
19 comes up over and over and that is the potential
20 effects of the timber management activities, and
21 because we are dealing with a harvest panel I will say
22 harvest, are generally similar but they can have
23 aspects that are site-specific. And I will not repeat
24 the evidence of Dr. McNamee other than to say that he
25 indicated that the rules of change were the same for

1 each activity regardless of where they occurred;
2 putting it another way, the factors that one must
3 consider when trying to determine the potential effects
4 of any particular activity, you consider the same
5 factors.

6 The next important message again which I
7 think permeates all of the panels of the proponent's
8 evidence is one which I believe, Mr. Chairman, is
9 probably succinctly put in the abstract of the report
10 of the President's Advisory Panel on Timber and the
11 Environment. I am going to read to you one and a half
12 paragraphs from that report or that abstract under
13 Environmental Concerns.

14 THE CHAIRMAN: Do we have that in front
15 of us, the report itself?

16 MR. FREIDIN: Yes, it should be Panel No.
17 10.

18 THE CHAIRMAN: What page?

19 MR. FREIDIN: 308.

20 THE CHAIRMAN: Thank you.

21 MR. FREIDIN: Under the heading
22 Environmental Concerns, the statement that I am going
23 to read, Mr. Chairman, is a statement which, as I have
24 indicated I believe, accurately reflects the position
25 of the proponent in relation to the subject matters

1 addressed in the quote:

2 "Many citizens conscious of the demands
3 modern society places on our environment
4 criticize operations and management
5 objectives on the national forests."

6 I think we can just translate that as Ontario:

7 "They have found much that upsets them:
8 erosion from logging roads, streams
9 clogged with logging debris, spawning
10 beds silted over, huge quantities of
11 slash and defective material left on
12 logging sites, and large area clearcuts
13 thus offending their aesthetic
14 sensibilities. Some question if
15 long-term forest management can be
16 practised without soil depletion. The
17 panel has made a thorough enquiry into
18 these and related matters. A careful
19 review of scientific findings together
20 with on-site inspection revealed that
21 most of such damage caused by
22 logging can be avoided or minimized.
23 Most of the fears that have been
24 expressed are unfounded, misleading or
25 exaggerated often due extrapolation from

1 an isolated case to forest lands in
2 general."

3 Now, Mr. Chairman, that is not to say that the
4 proponent takes the position that effects on the
5 environment which are not desirable never occur as a
6 result of timber management.

7 The main purpose of the quote is to I
8 think emphasize that one must always be very careful
9 about extrapolating from an isolated case to forest
10 lands in general, or in relation to timber management
11 in general, perhaps again more succinctly, timber
12 management activities.

13 Two last matters, both of which will be
14 addressed by Mr. Hynard. In the evidence to date I
15 believe there has been a tendency to distinguish
16 between the two forest regions, the boreal forest
17 region and the Great Lakes/St. Lawrence Forest region
18 as if they were completely separate and completely
19 different.

20 There are similarities in that there are
21 parts of the Great Lakes/St. Lawrence which are boreal
22 like, and by that I mean that there are areas of the
23 Great Lakes/St. Lawrence Forest that have some of the
24 same species with the same silvics and require similar
25 practices to manage.

1 And the last item, Mr. Chairman, is that
2 in a number of situations -- or there should be
3 distinction made between alternate methods of carrying
4 out a particular timber management activity, and in
5 this case harvest, and different methods of carrying
6 out a timber management activity.

7 THE CHAIRMAN: By that you mean...

8 MR. FREIDIN: You will hear there are
9 different methods of harvesting different silvicultural
10 harvest situations but, in some situations, those
11 different silvicultural harvest systems are not
12 alternate ways of harvesting, in some cases one or two
13 of those systems would not be appropriate at all.

14 THE CHAIRMAN: And by alternate, do you
15 also mean methods which can be substituted for each
16 other?

17 MR. FREIDIN: Yes. The last matter -
18 this is not a major point, Mr. Chairman - but I would
19 just indicate that there are going to be throughout the
20 evidence of at least the first three, and somewhat on
21 the later panel members, reliance on audio-visuals, a
22 fair number of slides.

23 And I would just indicate to the Board
24 and suggest that it should consider asking questions of
25 the witnesses as they go through their slides. I have

1 asked them not to sort of rush through them, to give
2 people an opportunity to sort of absorb what is in
3 them, and subject to the Board's desires in this
4 regard, we certainly have no objection and perhaps
5 would encourage the Board to ask questions about those
6 slides while they are there so that a full explanation
7 is given to the satisfaction of the Board in relation
8 to those photos.

9 THE CHAIRMAN: And in addition to the
10 package regarding Mr. Hynard's slides, will you be
11 providing hard copies for other slides if they are
12 used?

13 MR. FREIDIN: I think we are providing
14 hard copies of all slides from here on in, that has
15 been my -- that is my intention and I think we have
16 already got hard copies of the ones that are going to
17 be used by this panel.

18 THE CHAIRMAN: Very well.

19 DIRECT EXAMINATION BY MR. FREIDIN:

20 Q. Mr. Hynard, your paper I believe
21 begins at page 59 of the witness statement and is
22 entitled: Report on Silvicultural Harvest Systems in
23 Ontario; is that correct?

24 MR. HYNARD: A. That is correct.

25 Q. Could you perhaps indicate to the

1 Board how you are going -- how you have organized your
2 evidence for the purpose of making your presentation or
3 conveying the information in the report to the Board?

4 A. The way that I would like to proceed
5 is first of all to provide an introduction to the
6 silvicultural harvest systems. I would like to
7 describe those systems and show their field application
8 in Ontario through a series of colour slides.

9 I would like to explain the effect that
10 timber market constraints have on the implementation of
11 a silvicultural harvest system and finally to outline
12 the factors that are important in choosing the harvest
13 system.

14 In going through my paper, I have
15 reviewed the interrogatories and the issues arising
16 from the scoping session and I have attempted to
17 incorporate some of those questions, areas of interest,
18 into my direct evidence through clarification or
19 elaboration of a point.

20 Q. All right. Well, could you then
21 perhaps begin, Mr. Hynard, by explaining what
22 silviculture is and what different silvicultural
23 systems are in fact used in Ontario?

24 A. You have heard it before,
25 silviculture is the science and the art of cultivating

1 forest crops. Silvicultural systems are the process by
2 which the forest crop is removed, replaced and tended.
3 There are essentially two types of silvicultural
4 systems; uneven-aged systems and even-aged.

5 MS. SWENARCHUK: Mr. Chairman, I wonder
6 if we could ask the witness to slow down a bit.

7 THE CHAIRMAN: Okay.

8 MR. FREIDIN: Q. Yes, slow down, Mr.
9 Hynard, please.

10 MR. HYNARD: A. Yes, sir.

11 Q. They are hanging on every word.

12 A. Uneven-aged silvicultural systems
13 provide for the harvest of mature trees as they mature,
14 the replacement of those harvested trees with
15 regeneration and the tending of young trees in a stand
16 all at once, all at one time within the same stand.

17 Those integrated operations, if I might
18 call them that; the harvest, the regeneration and the
19 tending are repeated periodically. They are known by
20 the term selection cuts and they are repeated
21 periodically, theoretically in perpetuity. Uneven-aged
22 systems are also known by the name selection systems.

23 MR. MARTEL: Can you repeat the last
24 comment, Mr. Hynard, uneven..?

25 MR. HYNARD: Yes, uneven-aged systems are

1 also known by the name selection systems.

2 MR. FREIDIN: Q. And, Mr. Hynard, can
3 you advise: Is the selection system one which is
4 practised in both the boreal and the Great Lakes/St.
5 Lawrence Forests?

6 A. No, it isn't. The selection system
7 is practised only in the Great Lakes/St. Lawrence
8 Forest.

9 Q. All right.

10 A. Even-aged silvicultural systems
11 differ. They differ in that the harvesting, the
12 renewal operation and the tending efforts occur in a
13 sequence but at different times. A stand of
14 approximately the same age and stage of development is
15 grown to maturity, is harvested all at once, and then
16 it is replaced and the young stand that grows up is
17 then tended as required. I said stands of the same
18 approximate age.

19 I want to make the point that not all
20 stands, certainly not all stands in the boreal forest
21 and not all stands which are subjected to even-aged
22 management are purely even-aged. Age variations do
23 exist within stands, they result from partial
24 disturbance within those stands; for example,
25 windthrow.

1 MS. SWENARCHUK: Mr. Chairman, excuse me.
2 I am still having a great deal of difficulty keeping
3 up. A little slower, please. Remember we are all
4 doing this long hand.

5 MR. HYNARD: I am sorry. Age variations
6 do exist within stands. Those age variations result
7 from partial disturbances which occur in stands and a
8 couple of examples of those partial disturbances would
9 be windthrow, in which some trees are uprooted leaving
10 a place within the stands for understorey development.

11 It could result from insect attacks
12 killing some trees which has the same effect. It could
13 result from partial cutting in the past in which some
14 of the trees were removed and some of the trees were
15 left.

16 In his evidence in Panel 9, Mr. Armson
17 provided two examples of this type of variation. This
18 Figure 14 on page 58 of the statement of evidence which
19 was Exhibit 414 portrayed an even-aged jack pine stand
20 whose understorey had filled with black spruce over
21 time.

22 Mr. Armson provided a second example, it
23 was Figure 17 of the same exhibit. That example was a
24 160-year-old white pine stand whose understorey had
25 filled with red maple and balsam fir over time.

1 For practical purposes we consider that
2 stands whose main storey contain trees all within the
3 range of about -- within the range of 20 years to be
4 even-aged stands.

5 MR. FREIDIN: Q. Can you just explain
6 what you mean by main storey?

7 MR. HYNARD: A. The storey -- the main
8 storey would be the main canopy or the main layer in
9 that stand in which the bulk of the trees occur.

10 Q. And that canopy is measured in terms
11 of constant height from ground level in general terms?

12 A. In general terms, yes. I think when
13 you walk into a stand and take a look at it you are
14 struck -- the foresters are struck automatically by the
15 structure of the stand and certainly the main canopy
16 would stand right out if the bulk of the trees are in
17 that main height class.

18 Still talking about even-aged management
19 systems, even-aged silvicultural systems. Of course
20 stands which are for example clearcut, will not produce
21 another crop of timber for another full rotation and in
22 Ontario that might take 50 or 100 years or more.
23 It is obvious that that area that has been cut, that
24 stand which has been cut will not supply wood again for
25 that full term.

1 Continuity of woodflow from even-aged
2 systems comes from the fact that there are other stands
3 in other locations within that unit of other ages in
4 which harvesting will occur during the interim.

5 Evidence on providing for continuous wood
6 supply was provided in the statement of evidence on
7 Panel 3 and planning for the continuity of woodflow
8 will be covered in Panel 15 which I understand is
9 legendary.

10 Q. And you are not going to be here.

11 A. Still hoping.

12 THE CHAIRMAN: Anyone who misses Panel 15
13 as far as being a witness is going to miss out, I
14 assume, on a real treat.

15 MR. MARTEL: He is going to take his
16 vacation just to come.

17 MR. HYNARD: Besides those basic
18 differences between the two - uneven-aged systems and
19 even-aged systems - even-aged systems are those best
20 suited to specifics which are, first of all, intolerant
21 of shade, those which are susceptible to windthrow and
22 those which require special measures to regenerate,
23 measures that may not be possible within an existing
24 stand.

25 MR. FREIDIN: Q. Could you explain what

1 you mean when you say that even-aged systems are best
2 suited to those species which are intolerant of shade.
3 It's the intolerant of shade part that I would like you
4 to expand upon.

5 MR. HYNARD: A. Shade tolerance is a
6 silvical characteristic of trees. It refers to the
7 ability of the tree to survive at low light levels.
8 That ability varies from species to species. It can
9 vary also the various stages within a tree's life. For
10 example, juveniles generally show greater tolerance
11 than older trees.

12 The differences between species can be
13 very marked. Some species will not only survive but
14 continue to grow at low height levels within the
15 understorey of the stand, whereas other species such as
16 jack pine for example, require absolutely full overhead
17 light in which to establish and develop. And shade
18 tolerance is one of those silvical characteristics that
19 leads to succession that occurs within forest stands.

20 I mentioned another characteristic,
21 susceptability to windthrow. Even-aged systems are
22 best suited to those species which are susceptible to
23 windthrow. An example here is black spruce. Black
24 spruce is a tree with a shallow rooting habit making it
25 more easily upset by wind. It grows on deep organic

1 soils quite often which are again more vulnerable to
2 uprooting and it very often grows in high density
3 stands, stands of very high stocking. Stands at high
4 stocking levels are generally more susceptible to
5 windthrow than those which have been grown at lower
6 stocking levels. It is obvious then that while black
7 spruce has the shade tolerance capable of being used
8 under a system other than clearcutting, it doesn't have
9 the other characteristics.

10 I referred to special regeneration
11 measures, measures that may not be possible within an
12 existing stand and those special measures would include
13 silvicultural treatments such as heavy mechanical site
14 preparation, prescribed burning and aerial herbicide
15 application. Simply not feasible to conduct those
16 operations within an existing stand and those
17 treatments are often necessary to regenerate desired
18 species on some sites.

19 Q. Mr. Hynard, in relation to the
20 intolerant of shade, you say that the intolerance to
21 shade varies from species. Is there a range of
22 intolerance or is it like a black and white; these
23 species are intolerant, those species are tolerant?

24 A. There is quite a range in tolerance,
25 it is not simply black or white.

1 Q. And you indicated that even-aged
2 systems were well suited to species which were
3 susceptible to windthrow.

4 A. Perhaps it is the other way around,
5 perhaps it is that uneven-aged systems are not suitable
6 for trees which are susceptible to windthrow.

7 For example, if one were to conduct a
8 selection cut in a black spruce stand, especially a
9 black spruce stand on a lowland site that has high
10 stocking levels, the remainder of the stand would blow
11 down within a relatively short period of time. That is
12 what makes it unsuited to an uneven-aged management in
13 that case.

14 Within the even-age silvicultural systems
15 there are two main types: the clearcut silvicultural
16 system and the shelterwood system which I shall be
17 describing in some detail. Before I begin those
18 descriptions though I want to make the important point
19 that the silvicultural harvest systems are those in
20 which the harvest is planned as a part of a
21 silvicultural system and designed to facilitate the
22 establishment of the next crop.

23 There are sound silvicultural reasons why
24 clearcutting is the harvest system of choice on almost
25 90 per cent of the area cut in Ontario each year.

1 In Ontario, we do not clearcut simply because it is
2 more profitable or more convenient, we clearcut almost
3 exclusively in the boreal forest because it is the
4 system which best satisfies the silvical requirements
5 of the commercial species being grown in the north.

6 I am just going to turn on the projector
7 and show a slide giving the breakdown of the area cut
8 in Ontario by harvest system.

9 MR. FREIDINN: Mr. Chairman, that
10 particular slide is Table 2 which is found at page 89
11 of the witness statement and you'll note, Mr. Chairman,
12 that that table is the subject of one of the errata
13 list which you'll find noted in Exhibit 435.

14 The slide which has been put up does not
15 have those changes on it, but I don't think that that
16 should affect Mr. Hynard who I think is probably just
17 going to give an order of magnitude of these various
18 silvicultural harvest systems.

19 MR. HYNARD: Yes, that's right.
20 That Table 2 on page 89 as corrected shows that the
21 clearcut method is the method used over the greatest
22 area in Ontario. The selection method is the second
23 largest area and shelterwood third.

24 What I would like to do now is begin with
25 a description of each of the silvicultural harvest

1 systems; that is, the clearcut system, shelterwood and
2 selection and in my description of those systems to
3 show the slides depicting the actual field application
4 of those systems.

5 Beginning with the clearcut, the
6 clearcut consists of a single harvest cut or coop,
7 sometimes they are referred to as a coop in which all
8 or virtually all of the trees are removed from the
9 stand in one operation.

10 Clearcuts may be large or they may be
11 small depending on the forest conditions and the stand
12 conditions being harvested. Mr. Armson in Panel 9
13 provided information on clearcuts and clearcut size. I
14 should point out right now, when I am talking about the
15 prescribing of silvicultural harvest systems and other
16 silvicultural measures, I am talking about normal
17 operating areas, I am not talking about areas of
18 concern for other forest uses and values.

19 Prescriptions for areas of concern are
20 covered in the statement of evidence for Panel 15 and
21 regrettably I can't be there and these matters will be
22 covered in that panel.

23 MR. FREIDIN: Q. Perhaps, Mr. Hynard,
24 can you advise: Are silvicultural prescriptions
25 nonetheless developed for the areas which have been

1 designated because of non-timber values areas of
2 concern?

3 MR. HYNARD: A. That's correct.

4 Silvicultural prescriptions apply in those areas also,
5 although I should point out that the prescription in
6 some areas of concern may be no cut at all. But in
7 other areas the cut may occur, or another silvicultural
8 treatment and it will be a silvicultural cut or
9 treatment modified in some way to accommodate that
10 other forest use or value.

11 Like any other silvicultural harvest cut
12 clearcuts are confined by the stand conditions and by
13 terrain. By stand condition I include factors like
14 working group, species composition, age, and in some
15 cases even the presence of advanced growth.
16 By advanced growth I mean simply seedlings and saplings
17 present on the forest floor in the understorey prior to
18 harvest. Site condition includes factors like soil
19 depth, texture, moisture regime, terrain features
20 including factors like topography and slope.

21 It is of course essential that the cut be
22 confined to the area we have designated for the
23 harvest. We do not want and we will not tolerate a
24 clearcut or any other cut spilling over into immature
25 stands or stands that are otherwise unsuitable for

1 harvest.

2 Clearcuts are not always cut clear and,
3 in many cases, trees remain after the harvest cut. In
4 some cases they may be seed trees that have been
5 designated as a seed source for natural regeneration,
6 they may be standards designated for retention to just
7 keep on growing, but in other cases they may simply be
8 trees that were unmarketable by the logging operation
9 by virtue of their species, size or quality.

10 Let me digress for a moment from the
11 topic of clearcutting to address this other matter, the
12 effect of timber management constraints on the ability
13 to achieve a silvicultural cut, including a clearcut.

14 All of the silvicultural harvest systems
15 presuppose an ability on the part of the forest manager
16 to remove those trees, all of those trees or virtually
17 all of these those trees that he has designated for
18 harvest.

19 A clearcut is not a clearcut in a pure
20 sense if half of the trees remain standing following
21 harvest. Similarly a selection cut cannot, in a pure
22 sense, be called a selection cut if only the high value
23 trees are removed and the low value trees left behind.
24 Market constraints for certain species, types and
25 grades of timber exist across much of Ontario and they

1 may be expected to continue to exist for the
2 foreseeable future.

3 The statement of evidence for Panel 10
4 provides information on where the major market
5 constraints exist and I will refer you to that
6 document, but there are of course other market
7 constraints in local areas. At any rate, the important
8 point here is that these market constraints are real.
9 If there is no mill that can utilize that species or
10 type of timber within its economic trucking range, then
11 there is no possibility of its use.

12 This means that those trees within the
13 harvest, trees for which there is no economic market,
14 will remain standing after the cut. This is true
15 regardless of the silvicultural harvest system wherever
16 these conditions exist. In those cases where the
17 number of trees, that non-marketable type, represent a
18 minor portion of the stand it is possible to remedy
19 that situation by means of a silvicultural treatment
20 and that silvicultural treatment can include tramping,
21 herbicide application, prescribed burning.

22 Q. What's tramping?

23 A: Tramping is the pushing over of those
24 trees by a bulldozer, walking them down.

25 Q. Now, can you give any examples of a

1 market constraint -- just one moment. I think you
2 indicated that in some areas there are species which
3 are utilized and some areas there is no mill that wants
4 them.

5 Does that happen or occur in various
6 parts of the province or...

7 A. Yes, it does. I have outlined in the
8 statement of evidence for Panel 10 where those major
9 market constraints are and unless you would like me to
10 go through them, I would simply refer that to you in
11 the document.

12 Q. Perhaps you could just identify the
13 page where they will find that.

14 A. Oh yes, I am sorry. Page 85 and 86.

15 THE CHAIRMAN: Mr. Freidin, I have just
16 been advised that the court reporters are having a
17 little trouble with their equipment at the moment, and
18 I think we will take the break at this time for 20
19 minutes and allow them an opportunity to repair them.

20 MR. FREIDIN: Sure.

21 THE CHAIRMAN: Thank you.

22 ---Recess taken at 2:10 p.m.

23 ---Upon resuming at 2:40 p.m.

24 THE CHAIRMAN: Thank you. Be seated,
25 please.

1 Mr. Freidin?

2 MR. FREIDIN: Q. Okay, Mr. Hynard, I
3 think we were still talking about market constraints
4 when we left off.

5 MR. HYNARD: A. I had just finished
6 talking about the case in which those species and
7 grades which were non-marketable did not represent a
8 substantial portion of the stand and in which case it
9 was possible to remedy that situation of residual
10 timber with a silvicultural treatment, more of which
11 will be described in Panel 11.

12 There remains still other cases where the
13 non-marketable component of the stand represents a
14 sizable element and, in which case, remedial treatment
15 is not possible or practical. When that occurs there
16 are two options: The first option is to bypass the
17 stand, to refrain from cutting and cut the next stand.
18 That option is used if there is an expectation that the
19 markets for that type of timber will improve before
20 stand breakup occurs.

21 Let me give you an example. From my own
22 management unit Minden on the G.W. Martin licence there
23 is a substantial area of poplar which is now 95 years
24 of age. It contains a component of white pine and
25 white spruce which contain very valuable saw logs.

1 That tract has been allocated for harvest for ten years
2 now but remains uncut.

3 There is no market at the present time
4 for the low grade poplar in the stand. If we were to
5 harvest the pine and spruce from the stand at this
6 time, there would be little likelihood of being able to
7 return. The poplar would begin breakup and the balsam
8 understorey would take over the stand.

9 For ten years now we have been waiting
10 for the markets to improve. And with the new
11 combi-board plant that is just starting production now
12 in Bancroft prospects for it being clearcut now appear
13 good. However, there are other situations where
14 further postponement -- sorry.

15 Q. Are there advantages in that scenario
16 if you are able to clearcut it as opposed to going in
17 and taking out the pine and spruce?

18 A. Yes. If we were to take out the pine
19 and spruce content only, the cut-over would be
20 non-treatable, we would be unable to put pine and
21 spruce back on that site because the residual stand is
22 simply too heavy.

23 Q. And if you clearcut it, what sort of
24 things could you do with the site that you wouldn't
25 otherwise be able to do?

1 A. There are two options. If we
2 clearcut the site, we could allow poplar to regenerate
3 naturally and accept a crop of poplar. And our second
4 option would be to site prepare and plant white pine.

5 Q. Thank you.

6 A. That's been very fortunate in that
7 particular case, we had road access into the area and
8 the road access was to remain. It is under licence, it
9 is accessible, it can be cut at any time that market
10 develops. Of course there is a time limit on that and
11 that time limit, that stand is now within ten years of
12 final breakup. If that stand is not cut within the
13 next very few years our minds will change about what is
14 best for the stand. And that brings us to the --

15 Q. Now, just a minute. I am sure that
16 this is understood, but just to make sure, what do you
17 mean by stand breakup?

18 A. Stand breakup describes a stand of
19 timber which has gone beyond the point of maturity, has
20 become decadent, the trees are beginning to die, those
21 which remain alive are losing merchantable volume
22 because of internal decay.

23 Poplar is a species which has a very
24 short longevity, it has a very poor resistance to decay
25 and in poplar -- this is large-tooth aspen - well, like

1 trembling aspen once breakup starts it doesn't take
2 long before the merchantable volumes in the stand are
3 reduced by a considerable amount.

4 Q. And so when you use the term poplar,
5 I understand from your answer that that could be
6 large-tooth aspen or trembling aspen?

7 A. It could be either. That brings me
8 to the second option, the situation where further
9 postponement of the cut will only result in the loss of
10 the stand and where there is no expectation that the
11 markets will improve before breakup takes place.

12 In that case it is possible, it is often
13 decided to harvest the utilizeable component from that
14 stand for the simple reason that it is needed for
15 present wood supply, that it is not practical to return
16 to that particular stand because perhaps the road
17 system or abandonment of part of that road system or
18 simply because that timber will be lost to natural
19 agents at any rate. When those circumstances exist,
20 the stand may be cut for the marketable component.

21 Stands that are cut in that manner and in
22 which the residual timber is too extensive to permit
23 treatment are called non-treatable. Cut-overs may be
24 non-treatable for other reasons. This is one reason
25 that a stand can be considered non-treatable.

1 THE CHAIRMAN: But you might clearcut it
2 in in any event just to get it down to where you can
3 replant the whole stand?

4 MR. HYNARD: Well, in this case that I
5 have in my mind presently it is a stand in which the
6 residual timber is too excessive, there is no way to go
7 in with equipment and treat it. And so it may be cut
8 for its marketable component simply because that
9 marketable component will be lost anyway to natural
10 causes.

11 It would be left to regenerate by natural
12 means, although it may regenerate to a commercially
13 non-preferred species and the statement of evidence in
14 Panel 11 speaks to that and I am the witness for it and
15 I will be talking more about that in 11.

16 THE CHAIRMAN: So what makes you decide
17 whether or not you want to treat it to a specie that is
18 more valuable or just let it regenerate to a
19 non-commercially valuable specie?

20 I understand from what you are saying
21 that there is enough non-commercial timber in there so
22 that you would consider it non-treatable.

23 MR. HYNARD: That's right.

24 THE CHAIRMAN: But if the commercial
25 timber is going to die anyways, would you not want to

1 get that area of forest back to a situation where you
2 could then control it as to a specie that might be
3 commercial?

4 MR. HYNARD: Yes, there are exactly those
5 two cases where you are removing the marketable
6 component, let's say in the case of a boreal mixed
7 wood, you are removing the spruce and pine, leaving
8 behind poplar.

9 If you are able to, if you are physically
10 able to treat that stand, if you are able to take
11 machinery in and site prepare and plant, that would be
12 your desire in most cases and do so. If you are unable
13 to do that simply because there is too much residual
14 timber, perhaps 80 per cent of the stand remains, you
15 are unable to do anything with it, you remove that
16 conifer content because it is going to be lost and you
17 are unable to treat it, it is non-treatable.

18 Of course, it is true you have lost some
19 productivity for conifer on that site because of
20 that -- you are going to lose it anyway perhaps, that
21 means that if you want to maintain the same wood
22 production you would have to compensate by practising
23 more intensive measures elsewhere.

24 MR. FREIDIN: Q. Now, in that example
25 where you have got -- 80 per cent is not commercial and

1 you have got 20 per cent which is, I think the
2 Chairman's question originally was where you take out
3 the 20 per cent, if you leave it you are going to get
4 back the poplar and it is not commercial in that area,
5 but you could go in there theoretically, take out the
6 20 per cent of the conifers, clearcut the other 80 and
7 go in there and plant white pine. Theoretically you
8 could do that; is that correct?

9 MR. HYNARD: A. Is that your question?

10 MR. FREIDIN: Yes.

11 THE CHAIRMAN: Basically. In other
12 words, rather than just leave the forest to reproduce--

13 MR. HYNARD: Yes.

14 THE CHAIRMAN: --to a non-commercial
15 specie--

16 MR. HYNARD: Yes.

17 THE CHAIRMAN: --would you not, in a
18 situation where you are faced with that scenario, want
19 to at least, even if you only get 20 per cent at this
20 point in this rotation of commercial wood, at least set
21 up a situation so that 80 years down the road you could
22 get 100 per cent from that stand of commercial wood?

23 MR. HYNARD: That would be the desire.
24 If you are physically unable to because of the extent
25 of timber, it simply is non-treatable, there is nothing

1 in that case you might be able to do.

2 I should point out that many areas which
3 were non-treatable for these reasons later became
4 treatable, a market later developed. I think the
5 Thunder Bay area development of poplar market is a good
6 example where stands which were partially cut in this
7 fashion were later clearcut and rendered treatable by
8 artificial means.

9 THE CHAIRMAN: Okay. I guess the answer
10 to my question, my own question is the fact that you
11 have got nowhere to take that non-commercial specie, so
12 if you clearcut it ---

13 MR. HYNARD: You mean, just dropped it on
14 the ground?

15 THE CHAIRMAN: Yes. I mean, you
16 indicated I think that where you cut, you take out, you
17 take away.

18 MR. FREIDIN: Mr. Chairman, I am sorry,
19 but I think I know what is happening here.

20 Q. What are the factors that would cause
21 you to decide not to cut that 80 per cent, it is not
22 commercial and why wouldn't you cut that 80 per cent so
23 you could bring back say a white pine stand.

24 What stops you from going in there and
25 cutting it, and if I perhaps might indicate - lead a

1 little bit - why wouldn't you go in there and spend the
2 money that it would cost you to cut down 80 per cent
3 instead of just taking out the 20 per cent which was
4 commercial?

5 MR. HYNARD: A. Pretty thick here today,
6 there is no doubt. You are talking there about simply
7 cutting it down to get it out of the way.

8 Q. That's right. Where only 20 per cent
9 of the stuff you are going to take out of there is
10 commercial.

11 A. And the other 80 per cent is
12 non-commercial and you are simply cutting it down to
13 get it out of the way.

14 Q. Yes.

15 A. Yes. Oh, that's just straight matter
16 of economics. It may simply be not worthwhile to do
17 so, that it might be such a Herculean effort and cost
18 so many dollars that the effort is simply not
19 worthwhile.

20 THE CHAIRMAN: Well, you don't normally -
21 or do you - go in and cut something and just leave it
22 on the ground?

23 MR. HYNARD: Not normally.

24 THE CHAIRMAN: You have to take it
25 somewhere. If there is no commercial market for it,

1 you would either have to pile it up somewhere and let
2 it rot or not cut it. Are those sort of your two
3 options?

4 MR. HYNARD: Yes.

5 MR. FREIDIN: Q. But part of the cost of
6 doing that -- even if you could get it off site, you
7 would have to incur the costs of actually cutting it
8 and removing it off the site?

9 MR. HYNARD: A. Absolutely and your
10 costs would be very, very high in that case.

11 Q. In fact, in a situation like that,
12 depending on the situation, could the cost of actually
13 going in there and cutting and removing the
14 non-commercial stuff actually cost a significant amount
15 more than you would have earned or made by taking out
16 the good stuff?

17 A. Exactly, and there is the other point
18 too that you could have treated in a normal fashion
19 other treatable cut-overs perhaps three or four or five
20 acres for one, for one of these.

21 THE CHAIRMAN: Okay, thank you.

22 MR. FREIDIN: Q. Now, I think you -- in
23 answer to the Chairman's question I think got into
24 another situation where in fact you would go to buy one
25 of these stands where you would only take out part of

1 the desirable or the commercial and that you would come
2 back and you said that you would, in certain cases --
3 hold on. I don't have the page number unfortunately of
4 your report.

5 MR. HYNARD: A. Well, I think this is an
6 important item and it's worth spending the time on.

7 Q. All right. If I can just read to
8 you -- you say in your report:

9 "Many non-treatable stands left in the
10 past for natural regeneration have since
11 been treated by artificial means. Where
12 unexpected markets later develop,
13 return cuts for the residual timber are
14 made and treatment thence made possible."

15 Now, using your example of the poplar and the conifer,
16 just describe what would happen for that statement to
17 apply?

18 A. That statement actually comes from
19 the statement of the evidence from Panel 11. In an
20 example like that, where 20 per cent of the stand was
21 removed because it was marketable and 80 per cent was
22 left, ten years later a poplar market had developed and
23 that stand was now marketable, commercially marketable
24 and a clearcut is then made at that time and because of
25 the timber has been removed it is now treatable by

1 artificial means back to pine and spruce once again.

2 And I should point out too that there are
3 new treatment technologies which have developed in the
4 last ten years or so which have made former
5 non-treatable areas treatable, and I am thinking there
6 of serial treatment such as tramping, running over the
7 debris and the regrowth, herbicide appli -- followed by
8 a herbicide application to make it flammable, followed
9 by a prescribed burn to remove that debris, followed by
10 a planting.

11 And treatments of that nature have
12 developed and made many formally non-treatable areas
13 now treatable.

14 MR. MARTEL: Can we go back to the Minden
15 one then, that was a poplar -- low-grade poplar, white
16 pine and white spruce, I think you said.

17 MR. HYNARD: That's right.

18 MR. MARTEL: What are the make-ups, how
19 much poplar and -- because you said, and I only got
20 part of it, you said if you took the white pine and the
21 spruce and at that point a couple of years ago you
22 couldn't because the plant wasn't there, if you had cut
23 it then you would have had a great amount of poplar
24 left.

25 MR. HYNARD: That's right.

1 MR. MARTEL: You decided not to cut it,
2 had you cut it, I think you indicated what would have
3 happened and missed that. What would have happened to
4 that forest?

5 MR. HYNARD: Well, my concern with
6 allowing a cut at that time was that that would only
7 hasten the breakup of the stand. And I knew I didn't
8 have time on my side, I didn't want to have any further
9 hastening of that stand breakup. But oftentimes a
10 poplar stand or a mixed wood stand that is partially
11 cut, the result is the hastening of the breakup.

12 MR. MARTEL: But why wouldn't it come
13 back because it suckers - poplar does - why wouldn't
14 the whole thing come back as poplar?

15 MR. HYNARD: Yes.

16 MR. MARTEL: You would lose some of the
17 older stuff, but would it not come back as poplar?

18 MR. HYNARD: In this particular case -
19 and I sure wish I had some pictures here - the stand is
20 already aging and the understorey is filling with maple
21 and balsam fir, species not suited to that site.

22 A light removal of this pine and spruce
23 content would only encourage the further development of
24 that understorey. In order for the poplar to sucker
25 and reproduce another stand of poplar requires

1 clearcutting. The reason it requires clearcutting is
2 that it is shade intolerant, requires total overhead
3 light and it needs high soil temperatures to induce
4 those root systems to sucker.

5 So in fact I would have hastened the
6 succession towards balsam fir, essentially balsam fir
7 on that site, which would certainly not be in the
8 interest of timber production.

9 MR. MARTEL: Would you have ended up with
10 the type of site you showed us during the site visit
11 if you had every type of tree almost in the stand
12 because you didn't...

13 MR. HYNARD: Exactly.

14 MR. MARTEL: And none of it would have
15 been merchantable?

16 MR. HYNARD: And none of it would have
17 any good, that's right.

18 MR. FREIDIN: Q. Mr. Hynard, I'm not
19 suggesting that you do it to answer that question, but
20 if in the future you feel that it would be of
21 assistance for you to use the flip chart and draw -
22 everybody has the opportunity to sign their own little
23 doodles - so feel free, please.

24 MR. HYNARD: A. Thank you.

25 Let's return to the question of

1 clearcutting. Clearcut harvest operations are often
2 followed by regeneration operations, although in other
3 cases regeneration may be my natural means.

4 I said that the silvicultural harvest
5 systems were designed to facilitate the establishment
6 of the next crop. In the case of clearcutting it is
7 designed to do so by providing full overhead light for
8 shade intolerant species and there I include poplar,
9 jack pine, red pine.

10 Clearcuts also facilitate artificial
11 regeneration measures: Site preparation, planting,
12 seeding and tending operations are more easily carried
13 out in the open conditions of a clearcut and these
14 measures are often necessary in order to establish that
15 next crop.

16 I would like to go to the pictures and
17 show the variations. In Ontario there are several
18 variations of the clearcut: Clearcuts with seed trees,
19 clearcuts with -- well, let me run through the list one
20 by one and show the pictures as I go.

21 MR. FREIDIN: And, Mr. Chairman, these
22 are the pictures which we find -- they begin in the
23 witness statement at page 128. This is not one of the
24 photographs, but...

25 MR. HYNARD: No, it isn't, is it.

1 MR. FREIDIN: And these will be shown in
2 the sequence, same sequence that is found in the
3 witness statement starting on page 128 with the
4 exception of the two which have been removed.

5 Q. Is that correct; Mr. Hynard?

6 MR. HYNARD: A. That's correct. And if
7 anyone is curious why two slides were removed, there
8 were only 80 slots in the tray.

9 Q. Very practical.

10 A. Let's start with the first variation
11 of the clearcut which I will call the open clearcut.
12 It is a clearcut in which all of the trees are
13 designated for removal from the stand in one operation
14 and there is a sketch showing a clearcut with all the
15 stumps on the right-hand side and the uncut stand on
16 the left-hand side. Simply portrays the fact that all
17 of the trees were removed.

18 I make the point that all the trees were
19 designated for removal, keeping in mind that in some
20 cases trees are left because of reasons of
21 marketability.

22 This picture...

23 Q. And we are now -- this picture is
24 1.1.1 and we are now starting to show those slides.

25 A. The first photograph is a clearcut,

1 it is a clearcut that was made in a mature stand of
2 black spruce. You can see the black spruce stands in
3 the distance, relatively pure. The timber that you see
4 in the foreground is the tree-length timber that has
5 been skidded to roadside. All the trees have been
6 removed in one operation.

7 You might ask the question: Why was the
8 clearcut system chosen here as opposed to some other
9 system. Well, for example, in the case of black spruce
10 it is tolerant enough to use the uniform shelterwood
11 system but it is not windfirm, it would blow down if
12 that system were used. This is a lowland site but it
13 certainly does not appear from this distance to have a
14 suitable living spagnum seedbed for natural
15 regeneration, therefore, it is probable that this site
16 must be regenerated by artificial means. Leaving root
17 seed trees or carrying out a strip clearcut might be
18 totally ineffective in this situation for those
19 reasons.

20 MR. MARTEL: Do you ever use shelterwood
21 at all where there is black spruce?

22 MR. HYNARD: No, for the simple reason
23 that the remaining stand blows down.

24 Here is another clearcut, this time in a
25 mature stand of jack pine. Both the first picture and

1 this one were taken on the Iroquois Falls Forest FMA
2 near Cochrane. You can see again that all trees have
3 been removed in one operation. This is a very, very
4 different site type here.

5 You might ask the question: Why clearcut
6 in this case, why not another system. The answer there
7 is that jack pine is very intolerant and it simply
8 cannot be regenerated and develop in the understorey of
9 other trees.

10 MR. FREIDIN: Q. Could we just go back
11 to that photograph. Is there slash in that cut-over or
12 is there an absence of slash?

13 MR. HYNARD: A. It is hard to see it
14 from this distance. We looked at that slide very
15 closely. There is an absence of slash and the absence
16 is caused by full-tree harvesting in this case.

17 In fact if you look closely you can see
18 the harvest slash down the length of the road here
19 where the full trees have been skidded to roadside and
20 processed there.

21 THE CHAIRMAN: That was 1.1.2 in reverse?

22 MR FREIDIN: Yes, yes. How do you want
23 me to deal with this, Mr. Chairman? Do you want me to
24 read out the number as we go through?

25 THE CHAIRMAN: Well, I suppose if you are

1 doing them in order -- are you going to do them in
2 order.

3 MR. FREIDIN: I think I would prefer
4 perhaps to read it out because if we go to the
5 transcripts and it's not clear it's pretty difficult.

6 THE CHAIRMAN: Okay, maybe you better
7 then.

8 MR. HYNARD: Would you like me to read it
9 as I ---

10 MR. FREIDIN Yes, if you could indicate
11 what number the slide is.

12 THE CHAIRMAN: Some of these obviously
13 will be in reverse from what is in the book, but I take
14 it you have just got the slide flipped around, is that
15 right?

16 MR. HYNARD: Yes, that's the case. Last
17 night we were looking at them carefully to make sure
18 that John Deere on the skidder is written the right
19 way, it may have been wrong in the book.

20 This is photo 1.1.3. It is a clearcut in
21 a mature poplar stand on the Elk Lake Management Unit
22 near Kirkland Lake. If you look in the background, you
23 can see non-marketable white birch which has been left
24 standing, left standing because there was no economic
25 market for this timber.

1 Another feature in this picture is that
2 the degree of slash that's left in the cut-over, all
3 those tops that are left throughout. You can see there
4 is quite a degree -- quite a large amount of slash.
5 And the reason for that is the logging method, it was a
6 tree-length method rather than full-tree.

7 MR. FREIDIN: Q. And that's the method
8 that will be described by Mr. Oldford?

9 MR. HYNARD: A. Yes, that's right.

10 Q. Basically what's involved in that
11 tree-length method? Why is all the slash left? What
12 is the slash composed of?

13 A. The slash is the tree tops. They
14 have cut the tree down and cut off the top of the tree,
15 taken out the utilizeable section of the bole, the main
16 stem, and left the top.

17 MR. MARTEL: That white birch, it is
18 fairly old. Will it not become a reservoir for disease
19 and whatnot somewhere down the road as it ages?

20 MR. HYNARD: What normally happens to
21 white birch left in this condition is it suffers a
22 syndrome known as post-logging decadence in which the
23 tree begins to die relatively rapidly and within --
24 well, within 10 or 15 years the majority of those birch
25 trees would be dead.

1 During that time a reservoir for disease,
2 if this area was allowed to regenerate naturally to
3 poplar, there is no particular disease in that white
4 birch which would spread to the regenerating poplar
5 stand. It is not a particular...

6 MR. MARTEL: But as the trees get older
7 they become susceptible; don't they--

8 MR. HYNARD: They do.

9 MR. MARTEL: --to a variety of things?

10 MR. HYNARD: Yes.

11 MR. MARTEL: And I am just wondering if
12 they -- you know, depending on the age and the fact
13 that you are going to start from scratch to regen the
14 area over, what is the value of leaving them there if
15 they eventually become an area where in fact you can
16 lead to further problems?

17 MR. HYNARD: Yes. There is no value in
18 leaving them, there is a cost in removing them.

19 MR. MARTEL: Of removing them. But you
20 have to work around them eventually anyway when you
21 start to regenerate the area.

22 MR. HYNARD: Yes, that's right. In this
23 particular case, the degree -- the amount of white
24 birch in the distance is not sufficient to cause the
25 stand to be non-treatable. In fact, if that poplar

1 clearcut is left to regenerate naturally to poplar, it
2 would cause some early interference with the poplar but
3 because it's going to be all gone -- that birch will be
4 all dead and gone within 10 or 15 years, it is probable
5 it won't even be serious in that case.

6 The next picture is 1.1.4. It is also a
7 clearcut in a boreal mixed wood stand in the Iroquois
8 Falls Forest FMA near Cochrane. The stand has actually
9 had two cuts; five years ago it had a cut for all the
10 merchantable conifer material and, as a result of that
11 cutting operation, some natural regeneration of poplar
12 occurred and you can see the five-year old poplar which
13 root suckered as a result of the stand opening five
14 years ago when the conifer was removed.

15 MR. FREIDIN: Q. I was just wondering,
16 can you show that area again.

17 MR. HYNARD: A. Yes. There is your
18 five-year old poplar which regenerated naturally as a
19 result of the stand opening when the conifer content
20 was removed.

21 Four years later - one year before this
22 picture was taken - the stand was cut again, this time
23 for the poplar veneer content. Oftentimes when there
24 is a small specialized market like poplar veneer, a
25 separate logging contractor will follow the cut, taking

1 further material that is marketable for him. However,
2 you can see that considerable poplar remains, this is
3 relatively small diameter poplar and defective and no
4 market exists for poplar pulpwood in this area.

5 Q. All right. You mentioned poplar
6 veneer had been taken out one year before the picture.

7 A. Yes.

8 Q. What is the characteristic of the
9 poplar that makes it useful as veneer?

10 A. Trees to be useful for veneer must be
11 relatively large diameter and they must be straight and
12 sound without interior rot. The reason, of course,
13 they must be sound is that they are put on a lathe,
14 there is a chuck that goes into the end of the logs to
15 spin it as it is peeled on a lathe and, of course, the
16 ends must be sound.

17 They also must be free of surface defect
18 or relatively free of surface defect. If it is used
19 for the manufacture of poplar plywood which you buy for
20 sub-flooring and that sort of material, you can't have
21 big cracks and holes and so on in it or it would simply
22 fall apart in the manufacturing process. So for that
23 reason only a small portion of the poplar is suitable
24 for veneer.

25 This stand is also in a treatable

1 condition. The extent of residual timber there is not
2 sufficient to prevent treatment for conifer.

3 Q. What sort of treatment would you use
4 on that stand?

5 A. Well, I am going to have to mention,
6 first of all, that I am not a boreal forester and that
7 is not my field of expertise, however, for the
8 regeneration of black spruce - and I am presuming that
9 they would want to regenerate that area back to black
10 spruce - and if I can make a further presumption that
11 it is a fairly heavy soil, like a silty clay, my guess
12 would be that they would want to conduct light
13 mechanical site preparation to prepare a plantable spot
14 for planting black spruce stock and a chemical site
15 preparation to combat the degree of poplar competition
16 on that site.

17 MR. MARTEL: Would you try to knock back
18 some of that poplar, or would you leave it if you were
19 going to try to regenerate it to black spruce?

20 MR. HYNARD: Well, again, I am not
21 familiar with the area, I am not the forester for that
22 area and he would give you far better advice than I
23 could. But, Mr. Martel, we do have pictures of Minden
24 coming up and I will be glad to do that for you.

25 This is photograph 1.1.5. It is a

1 clearcut in a a mature poplar stand ten years following
2 cutting. It is on the Elk Lake Management Unit near
3 Kirkland Lake. It is ten years following cutting, you
4 can see that the cut boundary corresponds to the
5 topography here. You can see that the stand on the
6 hill is different in character, it is a conifer stand
7 not a poplar stand. The stand down below was a poplar
8 stand which has regenerated back to poplar and that
9 regeneration is now 10 years of age.

10 The next photograph is 1.1.6. It shows
11 what a 10-year-old poplar stands looks like from the
12 inside. This one is on the Mallette Forest FMA near
13 Timmins. This poplar has regenerated naturally
14 following the cut. Poplar in this area is a
15 commercially marketable species, it is a commercially
16 preferred species on some sites.

17 This area will be allowed to remain in
18 poplar production and harvested again at the end of the
19 rotation in probably 50 or 60 years from the date of
20 photography.

21 These are all pictures showing the
22 clearcut silvicultural system as it is applied under a
23 variety of forest conditions with a variety of
24 regeneration methods following.

25 This photograph is 1.1.7. It is a fresh

1 clearcut in black spruce. It took place on the Spruce
2 Falls FMA near Kapuskasing. The skid trail upon which
3 our man is standing -- if you look there is a skid
4 trail that progresses right all the way down the length
5 of the photograph. In this case the stand was clearcut
6 but there was an attempt made to protect the advance
7 growth from distruction by the logging.

8 One of those techniques is to confine the
9 skidding damage to skid trails rather than the
10 machinery wandering around at will. Mr. Oldford will
11 be talking more about that tomorrow. The trees which
12 remain are trees that were undersized at the time of
13 the harvest, small trees.

14 The next photograph is 1.1.8 which shows
15 a similar cutting method four years following cutting,
16 only this time we are not looking at the skid trail.

17 The young trees that you can see beside
18 the chap standing there were obviously present four
19 years ago. They were advanced reproduction, seedlings
20 and saplings that were present in that stand at the
21 time of the harvest and the stand is being regenerated
22 by natural means to this advanced growth. And you can
23 see other residuals in the background which were simply
24 small timber at that time.

25 That style of clearcutting on that site

1 type in that stand condition is an attempt - and I
2 should say a successful attempt - to mimic the horse
3 logging era which preceded heavy mechanization in which
4 the advanced growth was not destroyed.

5 Ah, here we are in Minden, Mr. Martel.
6 In fact, you stood on this road last November, you
7 turned your vehicle around just about where this red
8 dot is. This was your third site visit on your final
9 day on that southern tour. It is a recent clearcut, it
10 is a mixed wood stand that was poplar, white pine, red
11 maple, white birch and balsam fir.

12 I made that point earlier -- no, Mr.
13 Freidin made the point earlier that it is important to
14 understand that much of the forest in -- much of the
15 forest type within the Great Lakes/St. Lawrence Forest
16 region is boreal like in character.

17 MR. FREIDIN: Q. And Minden is in the
18 Great Lakes/St. Lawrence Forest region, I take it?

19 MR. HYNARD: A. That's right. The
20 poplar working group is the second largest working
21 group in both forest regions.

22 In fact, this particular stand was cut
23 for its pine content back in the 1960s, Clair Walker
24 cut this. And the stand was considered non-treatable
25 following his cut because of all the residual poplar

1 and red maple and white birch and balsam fir. A market
2 for some of that material later developed and a
3 clearcut was carried out in that stand.

4 Q. Can you advise whether the
5 silvicultural principles for dealing with similar
6 species in the Great Lakes as opposed to the boreal
7 differ?

8 A. The principles are the same. The
9 techniques may differ; the principles are the same.
10 You can see that there is residual timber standing
11 after the cut.

12 This is the second in a series of -- oh
13 dear, I am sorry, reporter, I have been neglecting to
14 tell you the photo numbers.

15 That last picture was 1.1.9. This
16 picture is 1.1.10. This is what it looked like on the
17 ground following the cut, and you can see that despite
18 that new market for poplar and some of the maple and
19 birch, there is still residual timber, but it is in a
20 treatable condition.

21 This is photograph 1.1.11. It was taken
22 four years following the clearcut and one year
23 following mechanical site preparation. I might mention
24 that this site is a variable depth but generally
25 shallow and very shallow silty, very fine sand over

1 ridgy broken and fractured bedrock. It is very similar
2 in characteristics to the Partridge Lake white pine
3 site which Mr. Armson showed yesterday.

4 Q. Does that site have any relationship
5 to the photographs in the previous two photographs?

6 A. It is the same area.

7 Q. When you say the same area, the same
8 exact location, or just the same area of the management
9 unit?

10 A. I will show Mr. Martel where he was
11 standing. The access road on which the tour came in is
12 approximately here (indicating), running in this
13 direction off like that. So you are looking at the
14 area that is immediately to the east of where we looked
15 on the site visit.

16 The previous photograph that -- I am
17 sorry, the first photograph in the series, the one from
18 the air, was taken from the southeast looking down on
19 the road itself in this direction. The second
20 photograph I took about 1982 I believe it was and I
21 can't recall where within the cut-over I was standing.

22 MR. MARTEL: You are going to discuss the
23 site presentation in a later panel then, the type of
24 scarification -- the equipment used and so on?

25 MR. HYNARD: I will be glad to tell you

1 what we did in this particular case but, yes, site
2 presentation will be addressed in Panel 11.

3 In this particular case, I am showing the
4 series of slides because it is kind of a time lapse
5 photography. When I was named to attend the hearings
6 and show you this information, I ransacked my old slide
7 collection and that of Dave Wray looking for examples
8 of silvicultural harvest systems and also renewal
9 treatments and tending, that I could return to and take
10 pictures of what they look like today.

11 And I was fortunate to find some. Of
12 course, most of those pictures are from my own unit
13 because I was able to go back to those spots. That is
14 why I would like to show the sequence so that you can
15 see the effect over time.

16 This area was site prepared with young
17 Steve mounted on the front of a bulldozer, so that the
18 machine wherever he had enough dirt to put those teeth
19 in the ground he would rip up all the poplar by the
20 roots and push that debris, including the organic
21 material and the duff and, to some degree, the stumps
22 and roots into wind rolls and you can see those on the
23 next photograph a little more clearly.

24 See, all these little snakey green lines
25 throughout, those are the pushouts where he was pushing

1 that material.

2 There was a lot of information given by
3 Mr. Armson on nutrient and the effects of this kind of
4 removal on productivity. In this case, this is a
5 shallow and very shallow site. In fact, we were unable
6 to treat the entire gross area for the simple reason
7 that it was too shallow. This particular soil is good
8 productive soil, it is productive because of its
9 texture, it has sufficient fine material in it to give
10 good cation-exchange capacity and moisture retention,
11 it has enough coarse particles in which to give good
12 drainage and aeration and it has that underlying bedrock
13 pattern to impede the drainage and give a better
14 moisture regime than you would otherwise expect.

15 It also has a terrific B-horizon; that
16 is, the weathered portion, the area -- the portion of
17 the soil horizon in which nutrients that are
18 decomposing in the litter are deposited. You can tell
19 the B-horizon simply by digging a hole. You can tell
20 by its depth and colouration. In this particular case,
21 the B-horizon extended all the way to the bedrock, the
22 inference being to me at least that there is good -- a
23 good nutrient pool in that horizon.

24 MR. FREIDIN: Q. Mr. Hynard, you said
25 there were certain areas there that you couldn't treat

1 because they were shallow?

2 A. That's right.

3 Q. What happened to those areas after
4 harvest?

5 A. Oh, last fall I went through that
6 area again to have a look at the pieces that were left
7 to see if, in fact, something could be done to treat
8 them as well, and I concluded that there wasn't. They
9 have since all grown up in principally balsam fir, but
10 also in red maple and brush species, beaked hazel,
11 mostly red maple and balsam fir.

12 The next spring after tree planting -- I
13 am sorry, after mechanical site preparation we planted
14 the area.

15 Q. This is 1.1.12?

16 A. That's right.

17 MS. SWENARCHUK: 1.1.13?

18 THE CHAIRMAN: The last one would have
19 been 1.1.12.

20 MR. FREIDIN: I am sorry. Sorry.

21 MR. HYNARD: 1.1.13, yes, that's right.
22 If you look - it is a little dark, I am sorry - if you
23 look closely though you can see the planted trees.
24 Here's one here (indicating), there's another one right
25 here (indicating), and boy we are going to have to dim

1 the lights to see them all. Another one here. This is
2 one year following plant -- one growing season
3 following planting.

4 At the time last fall when you visited
5 the site was three growing seasons following planting
6 and at that time the trees averaged slightly better
7 than one metre.

8 MR. FREIDIN: Q. What trees were
9 planted?

10 MR. HYNARD: A. White pine. You can
11 notice the other vegetation changes which have taken
12 place since treatment. Tremendous amount of grass has
13 since moved in, there is I can see some asters, of
14 course the planted white pine and poplar, there is
15 poplar right there.

16 Of course one of the reasons in treating
17 so heavily was to reduce competition from poplar, but
18 we did not want to see the poplar eliminated.
19 Elimination -- the poplar is actually beneficial to
20 white pine in helping correct form when it is attacked
21 by weevil.

22 Q. Can you explain what that means?

23 A. Do you have a time limit?

24 Q. No, but if it doesn't get asked here
25 it will get asked somewhere place.

1 A. Yes. White pine weevil is an insect
2 which attacks the leader of white pine. It deposits
3 its eggs in the leader and the eggs when they hatch
4 produce a larvae and the larvae feeds within the
5 leading stem. The end result is it kills the growing
6 tip of the tree. When that happens, a lateral branch
7 takes over -- maybe a drawing is in order here.

8 Q. These eggs that you are talking about
9 are laid in the terminal leader of the white pine; is
10 that correct?

11 A. That's right.

12 A. The reason I haven't been using this
13 is I am no artist. Here's the main stem of the white
14 pine, here's its lateral branches, here's its bud for
15 the next year and there would be lateral branches lower
16 which are arranged similarly.

17 It is the leader that is attacked and
18 killed by the white pine weevil, in which case one of
19 the laterals must take over and exert dominance. In
20 that case this would grow up like that (indicating),
21 set a bud and continue its growth from here.

22 If that happened only once it is not
23 particularly serious because the tree will have a
24 slight crook which is certainly apparent at this age,
25 but by the time we grow that white pine to maturity it

1 would hardly be apparent at all. If on the other hand
2 it is repeatedly attacked each year by weevil, then the
3 results are serious.

4 Do you need a number on this?

5 THE CHAIRMAN: Okay. I guess that will
6 be Exhibit No. 437.

7 ---EXHIBIT NO. 437: Hand-drawn sketch of results of
8 white pine weevil effect.

9 MR. FREIDIN: What are we going to call
10 it, Mr. Chairman?

11 THE CHAIRMAN: Sketch illustrating the
12 white pine weevil in effect. Okay?

13 MR. FREIDIN: Yes.

14 MR. HYNARD: The point of all this is
15 that the occurrence of this type of insect attack is
16 most prevalent when white pine is grown in open
17 conditions. This, by the way, is a native insect, it
18 is a normal occurrence, it happens in natural stands.
19 Our industry is cutting the white pine that have been
20 attacked, and attacked repeatedly, and white pine
21 remains a preferred species. However, it's true that
22 its preferable not to grow white pine that has been
23 damaged in this manner.

24 The way to overcome that is two-fold:
25 One is to grow the white pine in a bit of shade to slow

1 their growth rate down to make their leader less
2 attractive to the weevil. The second way is to grow
3 them in great density with all kinds of competition,
4 including pin cherry and poplar which causes form
5 correction faster; in other words, a lateral has to
6 exert dominance more quickly and that means the damage
7 is less significant.

8 MR. FREIDIN: Q. All right. So that the
9 photograph 1.1.12 which you pointed out that had not
10 only a planted white pine but some poplar which you
11 wanted to have there, what role would that poplar play
12 in terms of ensuring that you would have a correct
13 form?

14 MR. HYNARD: A. Well, it will play both
15 roles; one of growing faster than the pine passing it
16 and shading it, and also providing form correction. In
17 fact, my expectation on that particular site is that it
18 will pass the pine within ten years and, in fact, will
19 require tending treatment to release the pine from the
20 poplar, keeping that delicate balance between too much
21 poplar which overwhelms the pine and too little which
22 doesn't give enough protection.

23 Q. Right. And jumping ahead, Mr.
24 Hynard, when you say maybe ten years you would have to
25 come in and do a tending in order to release the white

1 pine, could you explain what you mean?

2 A. A tending treatment in that case
3 would be a silvicultural treatment in which we remove
4 the poplar manually, probably with brush saws in order
5 to release the pine, give it better growing conditions,
6 better available -- less competition for moisture,
7 nutrients and light.

8 Back to our clearcuts. This is
9 photograph 1.1.14. It is a first in a series of three
10 pictures, it was taken within four miles of the
11 southern most limit of the area of the undertaking. I
12 would like to just remind you that boreal like
13 conditions do exist within the Great Lakes/St. Lawrence
14 Forest.

15 This was a mixed wood stand of poplar,
16 balsam fir and white spruce in which both the balsam
17 fir and white spruce had been badly infested with
18 spruce budworm. The area was clearcut. The
19 silviculture objective was to produce another poplar
20 stand. In fact, this picture which was taken three
21 months after harvest.

22 If you look closely, you can see poplar
23 regeneration already occurring. There is one, another,
24 another (indicating). If you look closely you can also
25 see balsam fir. These were advanced growth on the

1 forest floor at the time of the clearcut. There is
2 another one right beside it, and another one in the
3 distance there. So that the stand will once again be a
4 mixed wood stand, however the poplar will be clearly
5 dominant.

6 I returned to the stand six years
7 following cutting and here's what it looked like. This
8 is that same location just on the opposite side of the
9 road actually - this is photograph 1.1.15 - and you can
10 see that the area has regenerated very well to poplar.

11 This is photograph 1.1.16. It is an
12 aerial view of the same cut-over. You can see the
13 boundaries of the cut quite clearly extending back
14 leaping in behind here, coming around like that.
15 Here's a piece -- there is the cut boundary there and
16 you will see that there is a missed piece within it, a
17 small -- it looks to me like a balsam cedar stand that
18 was bypassed because it didn't correspond to the stand
19 condition.

20 If you look closely you can see there is
21 an area of concern along this lake, in fact, there is a
22 cottage development there. At this point you can see
23 the docks out on the lake there, and there. The road
24 that is coming into this cottage development was built
25 by the cottagers and is maintained by the cottagers and

1 they have several interests there. Of course one of
2 their main interests is the resale value of their
3 cottages, the recreational enjoyment on the lake and,
4 of course, their road.

5 Q. Can you advise: Did the cottagers
6 play any role in the location or the decision -- pardon
7 me, decision about a reserve?

8 A. Yes. I talked to the president of
9 the cottagers' association. This cut was made I
10 believe about 1981. His name was James Bond and he
11 owned the cottage - so naturally he got pretty well
12 what he wanted - no, seriously, he lived in the cottage
13 right about here, a good chap to deal with.

14 Their main concern was the road because
15 they realized that the road was going to be used by
16 logging equipment and that it had a very, very thin
17 gravel surface and that logging equipment would damage
18 the road.

19 As a result of their particular concerns
20 about that, we scheduled the cut for the winter period
21 when the road is frozen and it would not be damaged by
22 the equipment. We collected a performance deposit by
23 the licensee to ensure that if any damage did occur he
24 would make good its repair. We scheduled no logging
25 during the weekends and no trucking during the

1 weekends. They were concerned about safety on their
2 road. The road is quite narrow, so there was no
3 trucking or logging occurred during the weekends.

4 The location of the cut boundary back
5 from the lake, which I believe in that case is in the
6 order of 200 metres, was there to make sure that the
7 cut was not visible from anywhere on the lake, it was
8 not visible from anywhere on their property. I should
9 point out, in all honesty, the cottagers would have
10 preferred that no cut took place.

11 I keep pushing the wrong button. The
12 next category of...

13 THE CHAIRMAN: Excuse me, Mr. Hynard.

14 MR. HYNARD: Yes.

15 THE CHAIRMAN: If it was a road put in
16 and maintained by the cottagers, I take it that it was
17 still on Crown land and, therefore, ownership was in
18 the Crown.

19 MR. HYNARD: That's correct.

20 THE CHAIRMAN: That you could control,
21 being MNR, could control the usage of that road
22 ultimately. Is that the way it went.

23 MR. HYNARD: Yes, that's correct.

24 THE CHAIRMAN: They couldn't bar the
25 forest company if you approved from coming in and

1 utilizing that road.

2 MR. HYNARD: That's right. What we find
3 normally -- this happens quite often in the case on my
4 management unit, where there are privately maintained
5 roads across Crown land which access timber and which
6 are eventually used by loggers.

7 The party who built the road and
8 maintained it cannot deny access because it is Crown
9 land. On the other hand, we will not grant a cutting
10 approval to the licensee to proceed with the cut until
11 resolution of that resolution of that issue has
12 occurred. We want to be sure that it is to the
13 satisfaction of the cottagers or to whatever party
14 maintains that road.

15 We have tried it several different ways.
16 We have imposed the conditions and collected the
17 performance deposits ourselves. We have had the
18 loggers negotiate with the cottagers directly and we've
19 said we'll withhold approval to commence cutting until
20 you two parties come to some agreement.

21 THE CHAIRMAN: Suppose they couldn't
22 agree; what would you do?

23 MR. HYNARD: Then -- that's never
24 occurred. It has never occurred perhaps because we've
25 told both parties that -- we've told the cottagers, for

1 example, that it is Crown land, it is a public road and
2 you can't deny passage on the road. We want you to
3 come to some kind of agreement.

4 We've told the logger the same thing, you
5 you are not going to get to cut that wood until you
6 come to agreement with that party. I think our
7 sympathies certainly are with the cottagers -- well,
8 they are with the loggers too.

9 Before we grant that cutting approval we
10 want to be sure that the resolution is fair to both
11 parties. We don't want to see the cottagers ransoming
12 the loggers either saying that you are going to pay a
13 fortune to use our road. It is a delicate issue, but
14 we have always found that both parties in the end come
15 to agreement.

16 The next category of clearcuts is
17 clearcuts with seed trees. Clearcuts with seed trees
18 are clearcuts but they are clearcuts in which some of
19 trees are designated for retention as a seed source for
20 natural regeneration. All other trees are intended for
21 removal. The seed trees -- the designation of those
22 seed trees may be by tree marking; that is, actually
23 having people out there with paint cans to mark them,
24 or it may be the product of some diameter limit
25 control, usually by tree marking.

1 The seed tree systems works only with
2 species that are wind firm. Obviously these trees are
3 standing alone out in that cut-over. They are now
4 exposed to more wind than they were previously, if they
5 don't have good structurally rooted systems, they will
6 blow over. It also requires that the cut-over remains
7 relatively competition free during the regeneration
8 period. Seed crops are periodic, they don't occur
9 every year, and if in the meantime that stand
10 regenerates naturally with other species, then the
11 system will not be successful. So it requires a
12 competition -- a relatively competition-free site.

13 The statement of evidence lists the three
14 main situations in which the seed tree system is used
15 but rather than simply read from those, let's take an
16 example.

17 MR. FREIDIN: Mr. Chairman, the figure
18 that was shown is reproduced on page 95 of the witness
19 statement.

20 MR. HYNARD: This is the first in a
21 series of four photographs. It is an aerial view of a
22 red pine seed tree cut -- sorry, clearcut with seed
23 trees in Algonquin Park. That's what it looked like
24 from the air the year following harvest.

25 MR. FREIDIN: Q. On that site, that

1 particular red pine site, what characteristics of that
2 particular stand made it appropriate for a tree seed
3 cut?

4 MR. HYNARD: A. Well, red pine is
5 adequate of producing adequate seed for natural
6 regeneration. It is a very wind form species. It
7 sends out widespread lateral roots with sinkers that go
8 down a long way and they hang on tight. So it is a
9 very wind form species. And this particular site is a
10 waterlaid sand relatively low in fine material and
11 relatively competition free.

12 The area was mechanically site prepared
13 after the cut by dragging these anchor chains behind
14 the skidder. For the loggers in the crowd, you might
15 say: Boy, that looks like a big load for the skidder
16 and that's right. I understand this machine was
17 replaced by a bulldozer shortly after.

18 Anyway, the purpose of the mechanical
19 site preparation in this case was to provide -- prepare
20 a seedbed to give a warm moist mineral soil which is
21 what red pine likes and that is what the operation was
22 conducted for.

23 Q. And if you could go back to that
24 particular matter. When was that photograph taken in
25 relation to the time of the cut?

1 A. It was taken four years after the
2 cut.

3 Q. And what photograph -- that is
4 photographs 1.1.2?

5 A. That's correct. If the question is
6 springing to mind, why did they wait four years, I
7 don't know the answer to that, I am not the unit
8 forester for at that unit.

9 In the case -- in the previous case that
10 we looked at on my own district, there was a lag there
11 also, it is because sometimes it takes you a year or
12 two to get around to it. You are just lining up all
13 your sites and getting your correct equipment and the
14 dollars and everything lined up, don't necessarily
15 treat in the same year of harvest or the year
16 following. We try to make that time lag as short as
17 possible.

18 This is a ground view of what that
19 cut-over looked like immediately following harvest --
20 or sorry, immediately following mechanical site
21 preparation. In that case you can see that the red
22 pine have been staying up, they haven't been blowing
23 over. I should point out that the frequency of seed
24 trees in this case is a little more than is normal for
25 a seed tree cut. Normally the seed trees are not

1 returned for, they are simply left but, in this case,
2 there is enough of them I am sure they will want to
3 come back and pick those trees up.

4 This picture was taken by Dave Wray, in
5 fact the first three were taken by Dave Wray who was
6 the unit forester at the time.

7 I returned to that site with his senior
8 technician and I returned there - let me just get this
9 straight - photograph 1.2.4, seven years following the
10 mechanical site preparation. Dave Harper the senior
11 technician on the unit informed me that they had
12 carried out a stocking assessment and it showed 85 per
13 cent stocking to red pine in the fifth year following
14 treatment.

15 Leaving the clearcut with seed trees and
16 moving to the clearcut with group seed trees, it is the
17 same principle. It resembles the clearcut with seed
18 trees except that the seed trees are designated in
19 groups rather than singly. It is a modification of
20 that system designed to accommodate non-wind firm
21 species but it similarly requires a competition-free
22 site.

23 Q. And that figure is at page 98 of the
24 witness statement.

25 A. In Ontario the group seed tree system

1 is used only in the harvest of mature black spruce and
2 it is used only on poorly drained, deep organic soils
3 especially those with a spagnum seedbed which is
4 suitable for black spruce establishment.

5 Q. Why only on those sites?

6 A. Because on sites without a seedbed,
7 on sites which are prone to competition, it is not
8 possible to secure natural regeneration.

9 This is a clearcut with group seed trees
10 in mature black spruce in the Kapuskasing District.
11 The groups are about 20 metres in diameter, they are
12 about 200 metres apart. The purpose of the group is to
13 minimize the effect of windthrow. However, all of
14 these trees will eventually -- I presume, will
15 eventually blow down. They need remain standing only
16 long enough to seed the area in. A group like that
17 would stay standing for some number of years though.

18 Clearcuts with standards. Clearcuts with
19 standards are clearcuts in which immature trees are
20 designated for retention so that they might keep on
21 growing.

22 MR. MARTEL: What was that number on that
23 last one, pardon me?

24 MR. HYNARD: Oh, I am sorry, 1.3.1,
25 photo 1.3.1..

1 MR. FREIDIN: Q. Figure 4 which is now
2 up there is on page 100 of the witness statement.

3 MR. HYNARD: A. Clearcut with standards
4 differs from the clearcut with seed trees which it
5 resembles in appearance in that the standards are not
6 kept to provide a seed source, they are kept to
7 continue their growth. Immature trees capable of
8 further growth, they can be picked up later on during
9 the rotation period.

10 I must point out that it is a
11 silvicultural system with a very limited application in
12 Ontario. It is suitable only for those situations
13 where the tree is wind firm, it contains immature - the
14 species it wind firm, it contains immature trees
15 capable of further growth in the understorey which are
16 of high value and the stand will regenerate by natural
17 means without a seed source. Fairly limited in
18 application.

19 But I have some pictures and this is a
20 first in a series of four. It is an aerial view of a
21 clearcut with standards in a stand of hard maple in
22 Minden. This is another site that was visited by the
23 Board, they drove in this road right here (indicating).
24 This is the boundary of the cut. The stand next to it
25 is an immature stand of also maple and you can see the

1 standards -- trees which have been designated for
2 retention and all the other trees were removed.

3 This is the appearance of the cut-over
4 immediately following harvest. The brown tops -- the
5 brown that you can see in the picture are the fresh
6 tops, slash from the harvest cut. The trees that you
7 see standing include trees that were marked and
8 designated for retention, the so-called standards, and
9 it includes other trees which are too small and too
10 defective for harvest. Those trees were girdled after
11 the operation.

12 Q. That photo is 1.4.3?

13 A. 1.4.3.

14 Q. And the first photograph that you
15 showed from the air, when was that photograph taken in
16 relation to the harvest?

17 A. Five years following harvest. The
18 picture was taken in 1986. This picture is the time of
19 harvest. The next picture, 1.4.4, is the same location
20 as near as I could find it as 1.4.3 five years later.

21 You can see that the form and quality of
22 the standards that have been kept - you see it here -
23 you can see the amount of maple regeneration which has
24 now developed.

25 Q. You mentioned in the last -- we had

1 the last slide up about certain trees being girdled?

2 A. Yes.

3 Q. What is that, why do do it?

4 A. Girdling it a tending technique
5 that's used to remove unwanted trees that are
6 interfering with other crop trees. We do it for that
7 purpose. The technique is to chop -- usually chop or
8 cut through the bark and into the sapwood and
9 completely around the stem of the tree. What that does
10 is interrupt the flow of carbohydrates from the leaves
11 to the root system. The tree eventually dies as the
12 root system starves.

13 If you look in the picture you can see
14 standing dead girdled trees in the background. A lot
15 of them have fallen down in hte interim. There is
16 another one right here (indicating).

17 Q. Why are they undesirable?

18 A. They are undesirable because they are
19 incapable of producing saw timber; poor form, poor
20 quality, and they would interfere with the development
21 of the regeneration.

22 I wanted to continue that time lapse but
23 unfortunately we ran out of time on that stand, so I
24 went to a similar stand, approximately four miles away
25 which was treated in a similar fashion 18 years ago.

1 There is the boundary of the clearcut
2 with standards, see it in the background there.
3 (indicating) You can see that there are really two
4 types of trees, there is the scattered mature trees --
5 scattered big trees; they are not mature, standards and
6 regeneration. And this is what it looks like inside
7 that stand.

8 I am sorry, the last picture was 1.4.5,
9 this is 1.4.6, 18 years following a clearcut with
10 standards in a hard maple stand.

11 All the slash that was left at the time
12 of the harvest has since decomposed. You can see a
13 stump in the foreground here. Unlike white pine whose
14 stumps seem to stay forever, there is still evidence of
15 the stumps from cuts a hundred years ago, hardwood
16 stumps are different, they decay much faster.

17 Strip clearcuts.

18 THE CHAIRMAN: I think, Mr. Hynard, we
19 will consider taking a break at this time. 20 minutes,
20 and then I think we will come back and perhaps go until
21 5:30, if we might today.

22 Thank you.

23 ---Recess taken at 4:00 p.m.

24 ---Upon resuming at 4:30 p.m.

25 THE CHAIRMAN: Thank you, ladies and

1 gentlemen. Please be seated.

2 MR. FREIDIN: Q. Mr. Hynard, before you
3 get into strip clearcuts, there were a couple of
4 questions I would like to ask you about the last
5 photograph you put up. It was photograph 1.4.6, it was
6 the 18-year-old stand showing a -- 18 years, and what's
7 the species in that particular stand?

8 MR. HYNARD: A. Hardwood. It is
9 predominantly hard maple although that is a basswood,
10 the larger tree right in the foreground here is a
11 basswood. Most of the others are hard maple.

12 Q. How many stems per hectare were in
13 that stand; do you know, the one that was 18 years old?

14 A. I judged it to be in the order of
15 13,000 stems per hectare. That's fairly high density.

16 Q. Now, at maturity, how many trees
17 would be there per hectare?

18 A. It is certainly difficult to be
19 precise on that, but in the mature class there would
20 certainly be not many more than 400 per hectare.

21 Q. And is that expected?

22 A. Oh yes, that's normal. Self --
23 natural mortality in young stands is normal, it is
24 beneficial. In the case of hard maple, it is
25 beneficial because that high density causes form

1 correction. Hard maple has a forking habit; instead of
2 one dominant leader such as red pine has, it tends to
3 fork and that forking habit is not corrected unless the
4 trees are very dense in the stand.

5 In fact, if you think about it, when you
6 look at hard maple that's ground in a field or on a
7 lawn, it is a big bushy thing and there is no one
8 single leader. And in a forest grown condition, hard
9 maple is not like that at all, it has got a nice
10 straight stem and that results from this self-thinning
11 process.

12 Q. Now, when you were showing some of
13 the pictures of clearcutting earlier, you described
14 some situations where all of the trees in that stand
15 weren't commercially desirable and, as a result, you
16 left them there.

17 A. That's right.

18 Q. And those -- when you leave those
19 trees, they are called residuals?

20 A. Yes.

21 Q. At one point in the evidence - and I
22 don't remember the exact photograph - I think you
23 indicated that -- or you pointed out the residuals on
24 the photograph and indicated that they didn't have any
25 value. And no value in respect to what, Mr. Hynard?

1 A. I believe that was the photograph of
2 the clearcut with standards in maple and I was
3 referring to no value with respect to timber.

4 Q. All right.

5 A. In fact, I believe I mentioned that
6 they were not capable of growing saw logs so they did
7 not have a value in that respect.

8 Q. And can we assume then when you were
9 giving your evidence in relation to silvicultural
10 harvest systems and methods, et cetera, that when you
11 are speaking of value that you are going to be speaking
12 in terms of timber values?

13 A. Well, yes. I tried to make that
14 point, that's correct. And I tried to make that point
15 earlier because otherwise I was afraid we would be all
16 over the map this afternoon if we couldn't confine it
17 to talking about silvicultural harvest systems and
18 practices for the purpose of timber production.

19 Yes, I was looking at it from that
20 aspect.

21 Q. All right. Could those residuals
22 have a value for a non-timber value?

23 A. Absolutely.

24 Q. Can you describe what sort of value
25 residuals might have in terms of non-timber values?

1 A. Well, it would depend; it would
2 depend on the species and the numbers and the size and
3 so on.

4 In the case of hardwoods that are left
5 and girdled I might add, such as the trees in that
6 picture, those trees as they are dying become
7 bug-ridden as we call them, and you certainly see
8 woodpeckers working on those dying and dead trees.
9 They have a value for wildlife in that sense.

10 Q. All right. Do they have a value for
11 wildlife before they die and start decaying, as you
12 indicated?

13 A. Well, they might if they had other
14 characteristics, but a normal healthy tree which was
15 unsuitable for saw logs because of its form perhaps but
16 didn't have any other particular attributes about it,
17 it might have no value or not very high value for
18 wildlife, at least as far as I understand it.

19 Q. And, Dr. Euler, could the residuals
20 in those photographs that you saw have a value for
21 wildlife purposes perhaps, in addition to the one that
22 was referred to by Mr. Hynard?

23 DR. EULER: A. Oh yes. In all
24 probability they would have value for wildlife because
25 of their location and juxtaposition of other plant

1 communities nearby and perhaps their age and perhaps
2 some of the insects that are there.

3 Q. And Mr. Hynard or Mr. Greenwood - I
4 don't care who deals with this - perhaps let me put it
5 to you, Mr. Hynard. If the species in the pictures
6 that you showed where you had residuals - all right,
7 let's assume that it was a species which wasn't --
8 pardon me, that had some commercial value and you were
9 going to have a clearcut, you were going to take
10 everything - if a wildlife manager wanted to leave some
11 trees in that cut-over, is there any mechanism where
12 that wildlife manager could make those desires known to
13 the forester.

14 MR. HYNARD: A. Sure, we do that all the
15 time. I suppose the formal process is the timber
16 management planning process. The biologist -- the
17 wildlife biologist would sit as a member of the
18 planning team. If he had those concerns, they could be
19 built into the prescriptions without any problem at
20 all.

21 In fact, we have been doing that in
22 Minden for years, several years now long before we
23 began work on our timber management plan with the new
24 planning team. We certainly recognize wildlife trees
25 in our marking -- in our individual tree marking for

1 selection cutting and commercial thinning, we identify
2 mass producing trees, den trees, trees with stick
3 nesters in them and we make a conscious effort to
4 retain trees of that type in our harvesting.

5 Q. Thank you. And could you then
6 perhaps move on and deal with the area of strip
7 clearcuts, please.

8 A. Strip clearcuts are progressive
9 clearcuts, they are laid out in strips that are two
10 chains in width or wider, that would be 40 metres in
11 width or wider. We are looking at a two-dimensional
12 view here of black spruce, a sketch of a black spruce
13 stand. I don't have the page number, do you have that,
14 Mr. Freidin?

15 Q. I think that's page 102, Figure 5?

16 A. This sketch is portraying the
17 progression of a -- there are three parts to this
18 sketch portraying the progression of strip clearcuts
19 within this stand.

20 And you can see that that first 40-metre
21 section has been taken out, the stumps are there. That
22 of course isn't limited to 40 metres. To be a strip
23 clearcut, it must be at least 40 metres wide.

24 This is the portrayal of what it looks
25 like after the second coop in a three-coop system here.

1 The first strip has regenerated naturally. The purpose
2 of the strip clearcut is to have a seed source and
3 provide other site protective values. It has a
4 moderating effect on water tables should it be
5 susceptible to water table rise, although I understand
6 that is a very rare situation.

7 There is, I suppose, some value in
8 shading near the edge, however, black spruce certainly
9 doesn't require shading. Here we are at the second
10 coop with the first strip now regenerated. Of course,
11 the final coop will not have an adjacent strip beside
12 it and, in that case, regeneration must rely upon
13 either advanced growth, seed tree blocks that are left
14 such as in the portrayal here, or upon artificial
15 methods to regenerate the third coop.

16 Q. Mr. Hynard, you indicated that the
17 strip cut would have to be at least 40 metres wide.
18 Why is that?

19 A. We have -- simply to distinguish
20 strip clearcuts from strip shelterwood. We have set it
21 at 40 metres. Anything wider than 40 metres we class
22 as a strip clearcut and anything narrower than that we
23 class as a strip shelterwood.

24 This is photo 1.5.1. It is a strip
25 clearcut in a mature lowland black spruce and on the

1 Cochrane Management Unit near Cochrane.

2 I talked to the unit forester for this
3 area, Tony Paradiso, asked him why strip clearcutting
4 had been chosen in this case. He indicated that a
5 pre-cut inspection indicated that a suitable spagnum
6 seedbed existed that would favour black spruce
7 regeneration. The stand in question would obviously
8 produce an adequate supply of seed.

9 He indicated that there was a lack of
10 all-weather access into this area. In fact, if you
11 look closely, you can see the winter roads, here and
12 here (indicating), and that the lack of access limited
13 other regeneration options.

14 He suggested that experience showed that
15 stocking levels of 40 to 55 per cent could be achieved
16 using this method on this site type and he indicated
17 that the second crop -- the second cut would be
18 harvested once acceptable stocking had been achieved in
19 the area of the first cut.

20 You can see that the boundaries of the
21 cut follow the terrain. There is certainly a rise in
22 the elevation at this point. I understand in that part
23 of the country that anything more than 18 inches is
24 quite a rise in topography, certainly a forest change
25 at that mark where there is a rise and the cut boundary

1 along here is where the -- there is a further falloff
2 in land level.

3 Q. Is that picture a picture taken in
4 the Clay Belt?

5 A. Yes.

6 Q. Is that topography representative of
7 the type of topography you find in the Clay Belt?

8 A. I understand that to be the case.

9 This is another aerial shot of a strip
10 clearcut in mature black spruce, this time on the
11 Cochrane Forest FMA. It is also a lowland black spruce
12 site. The spagnum seedbed is evident in the picture.
13 If you look at this yellowish colour throughout here, I
14 understand that this yellowish colour is in part to the
15 spagnum seedbed, so that would have considerable
16 spagnum I understand showing there.

17 If you look closely here you can also the
18 degree of blowdown which has occurred in the strip. I
19 think the Board members are close enough to see perhaps
20 better than the back of the room, but this whole corner
21 here as suffered quite a bit of blowdown.

22 If you are wondering what the pale yellow
23 colours are in the stand, there is a light tamarack
24 content in this black spruce stand.

25 Strip clearcuts do have disadvantages.

1 They have two distinct disadvantages over clearcuts,
2 and clearcuts with group seed trees where these
3 alternatives are viable.

4 Those two disadvantages are: First of
5 all, they raise the cost of the harvest for the simple
6 reason that it is necessary to return twice, and I
7 understand that the source of those extra costs is
8 essentially in roads. The other disadvantage is in
9 blowdown, because black spruce is vulnerable to
10 windthrow, that there are losses caused by blowdown
11 when strip cutting is employed.

12 It is, of course, worse where it is a
13 lowland site with deep organic soils and where the
14 original stand has high stocking. Those are factors
15 for the forester to consider when he is prescribing the
16 harvest system.

17 Block clearcuts. Block clearcuts are
18 clearcuts, they are laid out in a rigid square or
19 rectangular fashion with corresponding lead blocks
20 retained between the cut blocks.

21 Q. Mr. Scott can play checkers there.

22 A. How many squares? The lead blocks
23 are harvested after the regeneration has been secured
24 within the first cut blocks.

25 Block clearcuts are used for a couple of

1 purposes. One, they are used to prevent soil movement
2 on soil types that are vulnerable to wind erosion.
3 Those soil types would be silt-free fine sands with a
4 low water table and excessive drainage. I understand
5 that soil type to be relatively rare, and it would only
6 be vulnerable to wind erosion if it was coupled with
7 mechanical site preparation to expose the soil.

8 It is also used on extensive areas under
9 other stand conditions to provide for other forest
10 uses. Two uses that spring to my mind would be moose
11 habitat and the second one is, probably more important,
12 visual aesthetics along highways and other areas that
13 are travelled where an expansive clearcut is simply
14 unsightly.

15 This particular shot is photo 1.6.1. It
16 is from the Hearst Forest FMA in the Hearst District.
17 This is actually a slide taken of an aerial photograph,
18 a conventional air photo. The configuration is square
19 and they are two metres -- sorry, 200 metres per side,
20 most of them are anyway, which gives them a total area
21 of four hectares or 10 acres each, which is a very
22 small block.

23 Now, I know that sitting back as far as I
24 am you can't see this - but perhaps Mrs. Koven you
25 can - that there are striations within those blocks.

1 In some cases they go up and down, in other cases they
2 go back and forth. Those of you who have an interest
3 and want to see it afterwards, it is apparent fairly
4 close up and those striations are caused by
5 shearblading, mechanical site preparation that was
6 carried out in these blocks to help prepare a seedbed.

7 I understand that this area has had
8 stocking assessment since the time of the cut. The
9 blocks range from 70 to 90 per cent stocked and the
10 return cuts are now in progress.

11 The question is often asked: Is there a
12 set time period for those return cuts when the lead
13 blocks may too be harvested. And this question applies
14 equally to any two or more coop system, including strip
15 clearcutting, strip shelterwood, uniform shelterwood.

16 The answer to that one is no, there is no
17 set rule governing the return time. It depends, it
18 depends on the purpose of the block cut in the first
19 place and it depends on the results of the block cut
20 secondly.

21 For example, if the original purpose was
22 to aid in regeneration as in photo 1.6.1 - the first
23 strip clearcut I showed you - then the return cut may
24 take place as soon as the first cut has regenerated.
25 If the purpose is to prevent wind erosion, then the

1 return cut may take place as soon as the soils have
2 stabilized.

3 If the purpose of the cut in that fashion
4 is to provide for moose habitat, then the Moose
5 Guidelines suggest that a height of two metres of the
6 regenerating stand is adequate for moose cover, six
7 metres if it is a winter concentration area. If the
8 purpose of the block cut was aesthetics, the return cut
9 may be considerably longer until that young stand has
10 grown up far enough to be attractive in itself.

11 Q. Now, in terms of the first purpose,
12 you said that you could have and that was leaving --
13 using the block or strip cutting for regeneration
14 purposes, you say you go back and harvest the lead
15 block when regeneration occurred. And I take it you
16 mean regeneration in the cut-over?

17 A. That's correct.

18 Q. What characteristics would the
19 regeneration in the cut-over have to have before you go
20 back and harvest the lead block when the purpose of
21 this particular approach was for regeneration purposes?

22 A. I would look at two things in making
23 that decision. The first would be the degree of
24 stocking of regeneration which occurred in that cut,
25 and if the purpose is to provide a seed source, then I

1 must, of course, have adequate stocking in the first
2 block before I remove the seed source.

3 I might have a look also at free-to-grow
4 status if that were important. If I thought the cut
5 might fail, despite the fact that I had sufficient
6 stocking due to competition or for some other reason, I
7 might wait longer, but in most cases I think I am
8 looking at degree of stocking.

9 I should point out that where lead blocks
10 are left and they -- along areas of concern quite often
11 highways, waterways, a lead block is left and it
12 doesn't represent sufficient volume to warrant a return
13 cut, it is possible that the return cut that will not
14 take place at all.

15 And there are clearcuts in other
16 configurations also. Clearcuts may be laid out in
17 patches, blocks that are non-square or rectangular in
18 shape, they may take a chevron pattern. Cuts that are
19 made out -- laid out in other configurations are
20 usually done so for accommodation of another forest
21 use.

22 This is photograph 1.7.1. It is a
23 clearcut laid out in an irregular block pattern to
24 correspond to natural features. It is in Chapleau
25 District.

1 Photograph 1.7.2 is a clearcut laid out
2 in a chevron pattern along Highway 144 in Gogama
3 District. Chevron cuts are sometimes used to limit
4 visibility along highways. By chevron I refer to this
5 portion of the cut here.

6 If you were standing at some point along
7 the highway and look in you can see that there is no
8 point where you can see the expanse of cut-over behind,
9 and that is done that way simply so that the aesthetics
10 of the drive down the highway are less affected by the
11 cut.

12 There are a couple of other features that
13 are visible in this photograph. You can see a no-cut
14 reserve, a very narrow one, along this creek and back
15 running up this creek here, and indeed this other creek
16 over here. (indicating)

17 Q. Mr. Oldford, were you involved in any
18 way with that particular prescription to lay out the
19 cut in that way?

20 MR. OLDFORD: A. Yes, I can recall that
21 cut. That particular cut in the -- was along Highway
22 144 and it was carried out in 1973 about a year and a
23 half before I arrived in the Gogama District. But at
24 that time - and this is on the limits of the E. B. Eddy
25 Forest Products Limited - at that time both the

1 Ministry and company were concerned about a significant
2 amount of -- a significant volume, both in cubic metres
3 and in area, of jack pine that existed along the
4 Highway 144 corridor. And that jack pine was mature
5 and, in some cases, it was overmature.

6 So the company and the Ministry met and
7 we decided that it would be in the best interests of
8 good timber management to have this cut and over a
9 period of time we worked out two cutting methods. One
10 was the chevron cut that occurred about a year and a
11 half before my arrival, the other was a much more
12 extensive cut in 10-acre blocks along the highway and
13 those blocks are visible to anybody that has driven 144
14 highway in recent years.

15 Part of the reason why we moved to the
16 block cut, Mr. Chairman, was we -- this is jack pine
17 and with the chevron cut we didn't follow up with an
18 immediate renewal activity. The intent was that when
19 we came back and took out the remaining wood we would
20 do the renewal.

21 But there were quite a few questions from
22 the public and questions from citizens of Gogama and we
23 decided that if we went with the block cut, 10-acre
24 block cut, we could follow up with renewal the next
25 spring and we did that over a number of years.

1 MR. HYNARD: A. I would like to leave
2 the clearcut system now and move to shelterwood.

3 Shelterwood system consists of a series
4 of two or more coops in which a portion of the stand is
5 removed and the remainder of the stand is retained as a
6 source of seed for regenerating the stand and/or a
7 source of cover.

8 The uniform -- I am sorry, the
9 shelterwood system is an even-aged management system
10 like the clearcut, except that the harvest is extended
11 over a series of two or more coops. In other words,
12 there may be two ages in the stands during the period
13 of regeneration. This is the sketch--

14 Q. Page 109.

15 A. Thank you.

16 --showing the uniform shelterwood cut in
17 which a portion of the stand has been removed, a
18 portion of the stand has been retained and the young
19 stand is regenerating using -- relying upon the seed
20 source and the cover that it is providing.

21 I should point out right now that these
22 silvicultural systems are not interchangeable with each
23 other. For example, while black spruce is tolerant
24 enough to be regenerated using the uniform shelterwood
25 system provided you are on the right site type with the

1 right seedbed, it is not wind firm enough to be used
2 using that system.

3 The harvest operations using a
4 shelterwood are followed by regeneration operations
5 just like the clearcut, although the regeneration may
6 be by natural means, in fact usually is by natural
7 means but may be assisted in some way by mechanical or
8 chemical site preparation.

9 Uniform shelterwood cut or like the
10 portrayal here, occur uniformly across the stand. This
11 stand is lower in density more or less uniformly. This
12 is the first cut, often called the regeneration cut or
13 the seeding cut of this system.

14 Following the successful establishment of
15 regeneration, the removal of the residual stand may
16 occur in one or more cut -- sorry, one or more final
17 cuts or one or more cuts. This particular figure,
18 Figure 9 -- Mr. Freidin, do you know the page?

19 Q. Page 110.

20 A. 110. This shows a second removal cut
21 in which trees still remain. I am sorry, my artist
22 should have shown the regeneration getting a little
23 bigger as time goes by and you will certainly see that
24 in the slides.

25 Q. So that first - if you can just go

1 back - that first removal cut then is actually the
2 second cut within that stand; the first one being a
3 regeneration cut?

4 A. That's right. We are now at the
5 second cut in this theoretical stand. And here we are
6 at the third cut--

7 Q. Page 111.

8 A. --the removal cut or final felling in
9 which we are now back to an even-aged stand. We have
10 used our residual trees over that regeneration period
11 as a source of seed and cover to aid in the
12 establishment of that new stand.

13 Uniform shelterwood has its greatest
14 application where a tree species needs some protection
15 during its establishment period. That protection is
16 usually to prevent seedling dessication. White pine
17 fairs -- white pine naturals, naturals from seed source
18 fair much better in partial shade being protected from
19 dessication than they do in the open.

20 Planted white pine on the other hand do
21 much better in the open than they do in the shade. So
22 the choice of the system depends to a large degree on
23 the choice of the regeneration method. In this case
24 here, regeneration has been by natural means and the
25 final crop has been removed.

1 And I have a series of ten pictures...

2 Q. I am just wondering, just before you
3 go on to that, you indicated that after the final cut,
4 some time after that you end up with an even-aged
5 stand?

6 A. Yes.

7 Q. And could you explain how you do
8 that. In the example you had I think you had three
9 coops?

10 A. Yes.

11 Q. And how do you end up with an
12 even-aged stand having regard to your definition --
13 general definition of an even-aged system where all the
14 trees were within 20 years of each other approximately?

15 A. That's right. In this case -- in
16 this theoretical portrayal here, all of those trees
17 would you be within 20 years of each other in age. I
18 think you will see that on the slides too, that that is
19 true.

20 This is the first in a series of ten
21 photographs taken over an eight-year period. It is a
22 uniform shelterwood cut in a mature white pine stand
23 and, in this case, all the white pine are of the same
24 age, same approximate age about 100 years.

25 This stand originated from wild fire at

1 about 1880 I calculated it to be. I bored a number of
2 trees in this stand and counted stumps afterwards. I
3 have been interested in white pine for a long time.
4 This stand actually is at the edge of a wild fire which
5 occurred in 1920 and that adjacent stand has two age
6 classes of white pine in it. This one has only one.

7 This is the same stand following the
8 harvest.

9 Q. Photograph -- which one is that?

10 A. 2.1.2.

11 Q. Thank you.

12 A. The initial cut, which is the
13 regeneration or the seeding cut, took out about 50 per
14 cent of the stand volume. The idea was to open up the
15 stand to let enough light in for regeneration and yet
16 to keep enough seed source and cover to provide for
17 regeneration of that pine stand.

18 A hundred year old stand, the trees are
19 about -- oh, perhaps 80 or 90 feet tall. This is what
20 it looked like from the air following that shelterwood
21 cut. You can see that the stand has been opened up
22 quite a bit. There is lots of room between those
23 trees. If you look very closely you can see the cone
24 crop on the tops of the trees. If you look -- you see
25 that little brown tinge to it there, it is cones. You

1 can see them here, here and, in fact, all the trees are
2 carrying the cone crop. This is wintertime and those
3 cones are now open, that seed has now been released.

4 Q. Mr. Hynard, could you just go back to
5 the previous photograph, please. Now, you indicated
6 that is a picture after the first coop?

7 A. That's correct.

8 Q. When you used a system where you are
9 doing, you know, two or three coops, are there any
10 problems encountered in terms of getting out the trees
11 that you harvest without damaging the trees that you
12 are leaving there?

13 A. No, there is not a great deal of
14 difficulty at this time in carrying out the cut,
15 removing 50 per cent of the trees without significantly
16 damaging the others.

17 You have got to keep in mind that in this
18 case we are planning on a two-coop system with perhaps
19 15 years between. So even if a tree is damaged it is
20 not particularly serious. It is only going to wait
21 there 15 years before it is cut again, and it is
22 unlikely a great deal of decay would set into the tree
23 in that time period.

24 However, the final felling, in which we
25 remove these trees in a young regenerating stand, is

1 going to require a great deal of care.

2 Q. Could you explain what that care is?

3 A. Well, it consists of directional
4 felling to avoid damaging regeneration, directional
5 felling to line your trees up as best as possible so
6 that when the skidder chokes onto them, when he
7 attaches his cables onto those tree lengths to drag
8 them out of the bush that he's not swinging a big long
9 pine in an arc damaging regeneration. So he is going
10 to try and line those trees up.

11 It is also confining his skidder to the
12 same skid trail as much as is possible. You have got
13 to remember that there are choices in the direction a
14 tree can be felled, but there are limited choices. You
15 can't fell a tree in the direction opposite its lean
16 and it is not always possible, given the number of
17 trees in the stand, to put a tree exactly where you
18 want to.

19 I know that because I worked as a feller
20 when I began and so I am sympathetic with those people
21 who are attempting to directionally fell and minimize
22 damage and we have worked -- I work closely with our
23 licensees to minimize that damage. I think we are
24 successful.

25 MRS. KOVEN: Excuse me. When you select

1 the seed tree that remains behind in the first coop,
2 would that tree be of a higher quality than the trees
3 that are harvested?

4 I suppose if it is a very uniform kind of
5 stand you wouldn't have that decision to make, but if
6 it weren't...

7 MR. HYNARD: Well, you are right, we do
8 attempt to do that. The trees are marked for removal
9 and the tree marker is told to leave a certain stand
10 density behind and he is told wherever the choice
11 exists between trees to keep the tree which is bigger
12 and better formed.

13 Bigger because it will produce more seed,
14 better formed because we believe that if the tree has
15 good characteristics there is a greater likelihood at
16 any rate that its offspring will also have better
17 characteristics.

18 I am not sure if that proves out, but we
19 generally mark in that fashion, keeping in mind that
20 these bigger better trees will also be harvested as
21 soon as the regeneration is secure.

22 MR. MARTEL: Why would you cut trees the
23 second cut more carefully than the first?

24 MR. HYNARD: It is because of the
25 regeneration. The regeneration that will be there at

1 that time will be more vulnerable to damage than the
2 big trees which you are simply trying to skid between.

3 MR. MARTEL: You mean the 15-year-old
4 growth, you have to be careful?

5 MR. HYNARD: That's correct, exactly.
6 And white pine is - there is no doubt white pine is a
7 difficult species to regenerate by natural means. You
8 can't expect to have very, very high stocking levels.

9 In maple you might have as many as a
10 quarter of a million stems per acre of regeneration and
11 you can afford to damage them because there is so many.
12 In the case of white pine, to have 40 per cent stocking
13 by natural methods is good -- is a good success rate I
14 believe on my unit and you don't want to damage very
15 many of them, there aren't that many.

16 This is the same stand viewed from the
17 air. It's photograph --

18 Q. 2.1.4, I believe.

19 A. 2.1.4. It has a stand boundary
20 running right down here (indicating) and the
21 shelterwood cut is this expanse of pine in this area.
22 If you look closely there is -- there are spaces
23 between the trees. You can tell it has been cut but it
24 still looks pretty good from the air, in fact it looks
25 great from the ground.

1 The area to the left of the cut boundary
2 has been clearcut, in fact the adjacent area has since
3 been site prepared and planted up with white pine. It
4 was a poplar stand with a pine content. You notice the
5 flooded area here. You can tell it has been flooded
6 recently because there are dead trees within it. There
7 is another flooded area back here and another one here.
8 (indicating)

9 It has been my experience that following
10 poplar clearcutting beavers move in pretty well the
11 next year and flood up wherever they can and they are
12 there attracted by that fresh sucker growth of poplar.
13 It is very common for us to lose a little bit of ground
14 to beavers all the time. Our beaver populations are
15 very high.

16 This is photograph 2.1.5. We carried out
17 some mechanical site preparation two years following
18 the harvest, two years simply because it took us that
19 long to get to it. This particular machine that you
20 see here you will hear more about in Panel 11. It was
21 used to expose a mineral soil keeping in mind that
22 white pine likes a warm moist mineral soil. And that
23 was the purpose of this machine.

24 This is the kind of seedbed that resulted
25 from site preparation using that Lino patch scarifier.

1 This is photograph 2.1.6, a close-up of the seedbed and
2 you can see that we have good mineral soil exposure.

3 This is not an erodible soil, it is a
4 silty, very fine sand, there is enough sand content in
5 it, coarse material to allow for good water
6 infiltration and, of course, it is not wind erodible
7 because it has good silt content in it which holds
8 everything together.

9 This is a wide-angle view - if it looks a
10 little distorted - it is a wide-angle view of the
11 cut-over immediately following that mechanical site
12 preparation. You can see there is a lot of residual
13 slash still from the cut. There is a lot of mineral
14 soil seedbed for white pine regeneration and there is a
15 lot of greenery here. (indicating)

16 That greenery would be mostly red maple
17 and beaked hazel but there would also be an invasion of
18 pin cherry and poplar from root suckers following this
19 cut. It looks fairly open here because of that
20 wide-angle view.

21 This mechanical site preparation
22 treatment was followed by a chemical site preparation
23 treatment to offset that or combat that tendency of
24 this stand to regenerate. It is a very competition
25 prone site. It's shallow but very, very -- very, very

1 fertile.

2 This is photograph 2.1.8 which is in the
3 same stand. I went back and watched the regeneration
4 the following year. This is a seedling which is
5 one-year-old and would stand about 4 centimetres high.
6 The reason that white pine is so difficult to
7 regenerate on this site type is that it is a very slow
8 starter. It is a slow starter and yet its competition,
9 poplar and pin cherry and red maple are fast starters.

10 While white pine will tolerate some
11 shade, it's intermediate in shade tolerance, it will
12 not tolerate much root competition.

13 Here we are back in the same stand eight
14 years following the cut, six years following mechanical
15 and chemical site preparation.

16 This is photograph 2.1.9. It is also two
17 years following a chemical tending. This stand has now
18 been treated three times. If you look closely - and
19 those of you who are close enough to see - you can see
20 that there is dead poplar and other hardwood standing
21 throughout here resulting from the chemical tending.
22 You can also see that there is a tremendous amount of
23 competition which still remains in the understorey.

24 This is the last in the series of ten
25 photographs of that stand. It shows the type of white

1 pine regeneration which exists there eight years
2 following the cut. This particular tree is showing
3 good growth. It is in there with the competition but
4 it is showing good growth.

5 Unfortunately the rest of stand is not as
6 well advanced. There are portions that are well
7 advanced and portions that aren't. The stand is still
8 not yet free-to-grow.

9 I am still within the area of uniform
10 shelterwood, but I am moving to maple and yellow birch
11 right now. It is the first in a series of seven
12 photographs taken over a period of time showing uniform
13 shelterwood cutting in hard maple in Algonquin Park.

14 Photograph 2.1.11. Uniform shelterwood
15 system was chosen here to promote the regeneration of
16 of yellow birch.

17 Photograph 2.1.12. Here is an aerial shot
18 of the cut-over as it appeared immediate following
19 logging. You can see that a portion of the stand has
20 been remove. I don't have the figures available, but
21 that shot would suggest something over half of the
22 stand was removed. Here is a ground view of that same
23 cut-over immediately following logging.

24 This is photograph 2.1.13. If you look
25 at the photograph, you will see this green colour in

1 the understorey, all these trees, they are hard maple
2 advanced growth. Seedlings of hard maple that had
3 already established themselves on the forest floor
4 before the cut took place. You can also see stumps and
5 slash and, of course, residual trees.

6 Q. Do you know when that picture was
7 taken in relation to the time of harvest?

8 A. Yes, I do. I have it written down
9 here. I believe that's the year following harvest.

10 Q. Thank you.

11 A. I am sorry, I don't have it written
12 down, but I believe this picture is the year following
13 harvest.

14 This is photograph 2.1.14. By the way,
15 this first run of the series were all taken by Dave
16 Wray who was the unit forester on the area at the time.
17 The area was mechanically site prepared using a small
18 track bulldozer and a straight blade, just sort of
19 pushed here and there and bared mineral soil. The
20 purpose of which was to invite the natural regeneration
21 of yellow birch.

22 All these little green spots here are
23 fresh yellow birch germinates and that one is a hard
24 maple, fresh germinate. This one is a hard maple
25 seedling sprout, I believe -- the shape of the leaves

1 and size suggest to me it is a seedling sprout and not
2 a seedling.

3 So they mechanically site prepared to get
4 a catch of yellow birch and they were very successful
5 in doing so.

6 Q. Now, I'm not even sure whether this
7 is going to be important for Panel 11, but what's the
8 difference between a seedling and a seedling sprout?

9 A. A seedling is a tree that originates
10 from seed, the seed germinates and the tree develops. A
11 seedling sprout is a seedling which is decapitated and
12 sends up a sprout from the advantageous bud of the root
13 collar, usually the root collar. A seedling sprout
14 would be a quality equal to a seedling, probably faster
15 growing though.

16 Q. All right. The root collar?

17 A. Pardon me. The root color collar is
18 that portion of the tree that marks the join between
19 the root and the stem.

20 Q. Thank you.

21 A. And probably the decapitation in this
22 case occurred as a result of the blade work.

23 Photograph 2.1.15, three years following
24 the harvest. Let's make sure I have it right here.
25 Yes, 2.1.15 shelterwood, same location three years

1 following harvest and two years following site
2 preparation.

3 You can see that there is still quite a
4 bit of hard maple advanced reproduction in the areas
5 which were not disturbed by the mechanical site prep
6 and this yellow paler colour back in the background
7 would be yellow birch which resulted from the
8 mechanical site preparation.

9 Photograph 2.1.16 shows that a little
10 better. This is a photograph which I took -- no, Jerry
11 Merchant took, we were together at the time, seven
12 years after the initial shelterwood and six years after
13 of the mechanical site preparation.

14 The yellow birch regeneration is now well
15 established, it is throughout this area of pale green
16 here. Quite a bit of sugar maple remaining. If you
17 notice the darker green patch, it would be sugar maple
18 or hard maple seedlings from advanced growth in a spot
19 that was missed in the site preparation.

20 In this case, the yellow birch has been
21 held back severely by repeated browsing by white-tailed
22 deer.

23 Q. That is photograph 2.1.17?

24 A. Yes. Heavy browsing can have a
25 serious negative impact on the survival and success of

1 yellow birch regeneration and that's been noted in
2 Algonqui Park in the past.

3 In most cases -- of course we have a lot
4 of deer browsing on my unit also. In most cases, the
5 trees eventually outgrow the deer and the deformities
6 that they suffer as a result of that heavy browsing are
7 eventually concealed in the stem.

8 So that while there is an effect, it is
9 not normally irrecoverable. There are studies in the
10 New England states, however, where deer can actually
11 change the species composition of the forest. We
12 certainly know that's true of beaver.

13 I mentioned that shelterwood cuts are
14 followed eventually by a final felling. That's the
15 case in this. It's a hard maple stand in Minden in
16 which all or virtually all of the residual trees have
17 been removed and we are now left with a young stand of
18 hard maple all within approximately 20 years of age of
19 each other. That's that brown haze throughout here on
20 the picture.

21 That's photograph 2.1.18. And if you
22 look you can see the snow caps on the stumps
23 throughout.

24 Q. When you say within 20 years of age
25 of each other--

1 A. Yes.

2 Q. --does that mean they are all between
3 1 and 20 years old approximately, or...

4 A. Well, in this case the range would be
5 much narrower. I am trying to remember -- I haven't
6 got it written down, the age of this stand but yes,
7 that's what I mean, that all the trees would be between
8 1 and 20 or perhaps between 41 and 60 in other
9 situations.

10 Q. Thank you.

11 A. Before I begin on selection system,
12 there is one final variant of shelterwood, strip
13 shelterwood. The strip shelterwood resembles strip
14 clearcuts except that it is narrower, it's the only
15 essential difference.

16 I don't have any slides unfortunately of
17 strip shelterwood in the evidence, however, it is used
18 in the regeneration of yellow birch in hardwood stands
19 particularly in the northeastern region.

20 MR. FREIDIN: Mr. Chairman, I am sorry,
21 if Mr. Hynard is finished with this section, I think
22 this would be an appropriate time to break.

23 THE CHAIRMAN: Okay. Very well.

24 Ladies and gentlemen, we will break for
25 the day. Tomorrow will be another full day because we

1 are sitting through to Friday this week, so we will
2 commence at 9:00 a.m.

3 Thank you.

4 ---Whereupon the hearing adjourned at 5:34 p.m., to be
5 reconvened on Thursday, March 2nd, 1989, commencing
at 9:00 a.m.

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